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American Coal Basins.

Sir Charles Lyell, the eminent geologist, in his "Travels in North America," says :—"From Uniontown we went to Brownsville, on the Monongahela, where the country consists of coal measures. I was truly astonished, now that I had entered the hydrographical basin of the Ohio, at beholding the richness of the seams of coal, which appear everywhere on the flanks of the hills, and at the bottom of the valleys, and are accessible in a degree which I never witnessed elsewhere. The time has not yet arrived—the soil being still densely covered with the primeval forest, and manufacturing industry in its infancy—when the full value of this inexhaustible supply of cheap fuel can be appreciated; but the resources which it will one day afford to a region capable, by its agricultural produce alone, of supporting a large population, are truly magnificent. In order to estimate the advantages of such a region, we must reflect that the great navigable rivers (the Alleghany, Monongahela, and Ohio) intersect it, and lay open on their banks level seams of coal. I found at Brownsville a bed, ten feet thick, of good bituminous coal, commonly called the 'Pittsburg Seam,' breaking out in the river cliffs near the water's edge. So great are the facilities for procuring this fuel, that already is it found profitable to convey it in flat-boats for the use of steamships at New Orleans, 2,000 miles distant, in spite of the dense forests bordering the intermediate river plains, whose timber may be obtained for the cost of felling it."

New Mode of Fencing.

It is said that a gentleman residing in Windsor, Vt., has introduced into that region a method of fencing, which for cheapness or durability and efficiency, can hardly be surpassed. He procured stakes of a suitable wood, five feet in length, and steeped the lower portion of them in a solution of blue vitriol—one pound to forty of water. This renders them almost indestructible by the natural process of decay. He then drives the stakes into the ground at a distance of eight inches apart, bringing the tops into a straight line, and nailing upon them a narrow strip of board, using one nail for each stake.—Among the advantages of the fence thus made, apart from its cheapness, it is said that "cattle and sheep can't get through it, horses will not jump it."

How to apply Guano.

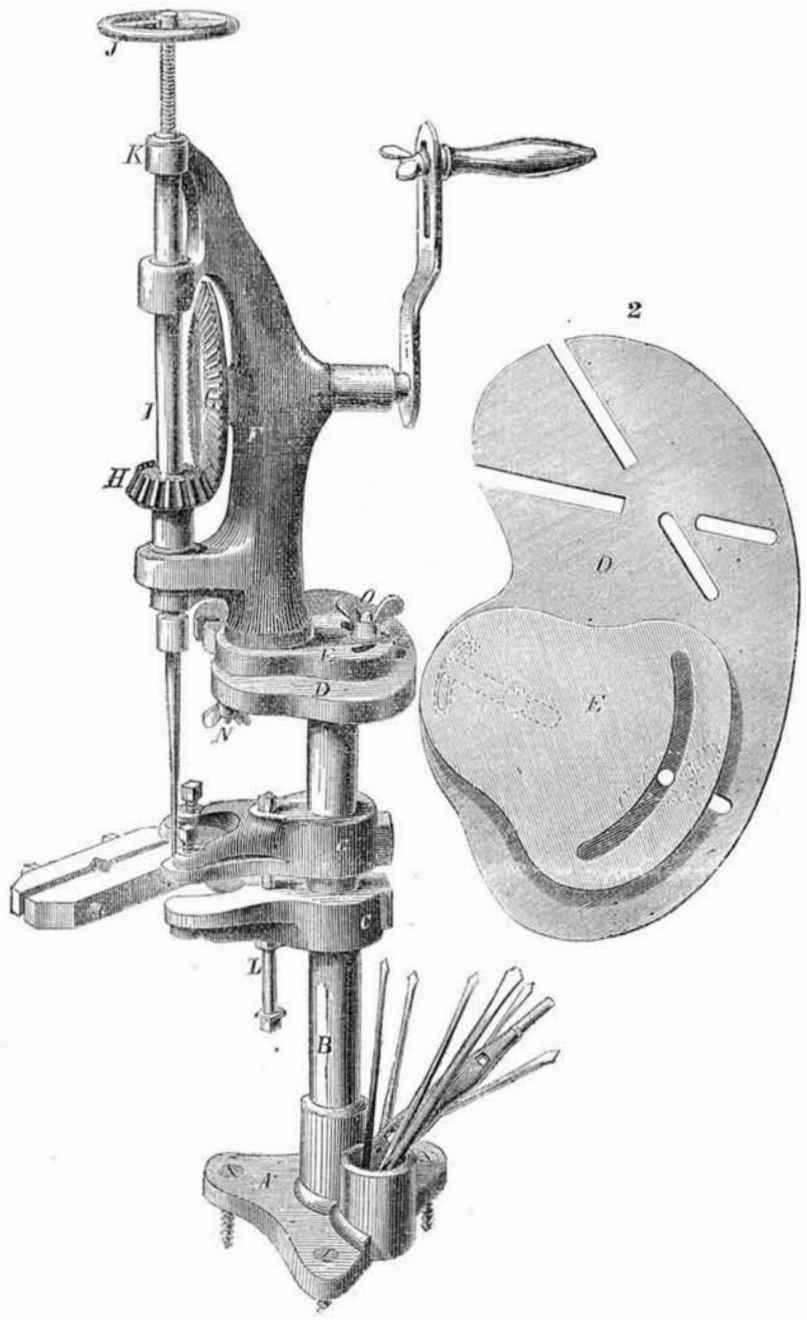
For corn spread 300 pounds to the acre and harrow in, after pulverizing and mixing with any moist loam; or, if you use other manure, apply a handful of the mixture to the hill before dropping the corn. For grain crops, broadcast and harrow under. For grass broadcast, and use in a rainy day, early this month. It is more pleasant to use it when mixed with loam.

A New Cent.

There is a proposition to coin a new description of cent. It is to be of white metal, resembling silver in appearance, with a round and slightly raised edge. It is about eight-tenths of an inch in diameter, larger than a quarter eagle, and less than a twenty-five cent piece.—There is to be no hole in the coin.

HAND IRON DRILL.

Figure 1.



The annexed engravings represent a very convenient new Hand Drill, which is manufactured by I. A. Tewksbury, of Lawrence, Mass. Figure 1 is a perspective, and figure 2 a plan view.

A is the stand or socket to secure the drill to the bench; B is an upright iron standard, having jaws, C C, to confine the work which is to be drilled, or to clamp anything, which may be as wide as can be admitted for the screw, L. This latter is fitted into the upper jaw, C, and slides loosely through the under one, with the check-nut underneath to keep it in its place; D is a plate fitted tight with a left-handed screw upon standard B. The plate, E, is movable upon D, by means of two curved slots in the former and straight slots in the latter. This is for the purpose of setting the drill on the desired line for operation. The plate, E, is secured tight to the part F. The slots in plates E and D are shown in figure 2, they are for the purpose of setting the point of the drill within five inches from the upright, B. The plate, E, swings in a circle on a center pin, and then the two plates are made fast together by the thumb screws, N O. Motion is given to the spindle by means of the bevel gear, G H, and the drill is fed down by turning wheel J, the screw spindle, I, working in nut K. The construction and operation of the guiding plates, E D, appears to us to be a new and useful improvement. Any improvement in machinery tools, however small it may be in itself, is of great importance in the aggregate, because tools like the above drill, are of such general use.

More information about the price of such machines, &c., may be obtained by letter addressed to Mr. Tewksbury, at Lawrence.

A Fact in Natural History.

The researches of scientific men have shown that some species of crustacea, among others, the ordinary barnacles which infest the bottoms of our ships, although blind, fixed and helpless, as they appear to us are, in their youth, active, sharp-sighted little creatures, shaped somewhat like our water flea, with long antennæ, which are provided with cups at their extremities.—Having passed the period of youth, they begin to think of settling down steadily in some chosen spot for the remainder of their life. By means of sucking cups they adhere to some fixed or floating body. In this position a long hump grows out of their backs, from the end of which a sticky fluid is poured out, which glues them firmly to the object to which they have attached themselves. The function of their sucking cups are thus rendered useless, and the little animal glides down the declining days of its little stream of life, in quiet, placid, contented enjoyment of a new phase of existence.

Locomotives on Prairies.

A correspondent of the N. Y. "Evening Post," who passed over some of our principal western roads during some of the coldest weather of last winter, says:

"The experience of a ride in a still, cold day, from Detroit to Chicago, has taught me that some things are to be learned by experience alone. The consumption of wood on the open prairies, in cold weather, in the locomotives, is much greater than among the settlements or in the timbered country, and the amount of steam produced much less. A train will leave Detroit with from twenty-five to thirty-five freight cars, and from eighty to one hundred pounds of steam. As it nears Chicago, on the open prairie, the steam will fall gradually to thirty-five or forty-five pounds; and the engine leaving half its train, runs with the remainder to Chicago. So, put an iron box-stove on the top of one of the cars on the prairie, let the fire burn intensely, and the surface of the stove will not burn the hand laid upon it. It is a problem, the solution of which would make the fortune of an inventor, how this very rapid loss of heat can be prevented. Perhaps some of your readers can find a remedy."

The very reason why a person feels colder when walking in the face of a strong wind than when it is calm, in cold weather, should have led the above correspondent to a correct conclusion. It is warmer to walk in the forest than in the open plain in winter, although the thermometer may indicate the same temperature in both places. The strong current of air which unobstructed impinges freely on the locomotive on the prairie carries off all the extra heat generated above that which it retains when passing through a woody country. To save fuel on locomotives which run on the prairies, in fact anywhere, the cylinders should be well covered with non-conducting material, or set in the smoke box. The boiler and dome should also be so covered; this is the only remedy that can be provided to save the heat generated from being carried away by radiation.

Weight and Measure of Water.

As a liquid, water is made the standard of comparison of the specific weight or gravities of other liquids and solids. At 55° Fah. a cubic foot of water weighs 998·74 ounces avoirdupois, but for facility in calculations it is generally taken as 1000 ounces, and the imperial gallon is fixed at 160 ounces, or 10 lbs. avoirdupois of distilled water. By weight a cubic foot of water is taken as 62½ lbs., and by this data the cubic contents in feet of any water tank or boiler multiplied by 62½ gives the weight of water in lbs. avoirdupois, and these lbs. divided by 10 give the number of gallons. Thus if the water space in a boiler be 60 cubic ft. it will contain 3750 lbs. or 375 gallons of water, for $60 \times 62{\cdot}5 = 3750$ lbs. and $375 \div 10 = 3750$ gallons

On the Flying of Birds.

We have received quite a number of letters in answer to the inquiry of J. B. C., on flying. One of these, from one who has devoted much attention to the subject, we published last week; as it embraced the views of all the rest on the subject, it is not, therefore, necessary to publish much, if anything more. In a letter from P. H. Wait, of Glens Falls, N. Y., who is something of a sportsman, and has closely studied the flight of hawks, he states that he has observed them attentively, and that "they always move their wings, but do not, like pigeons, &c., bring them close to their bodies. The stroke of their wings is short and rapid.

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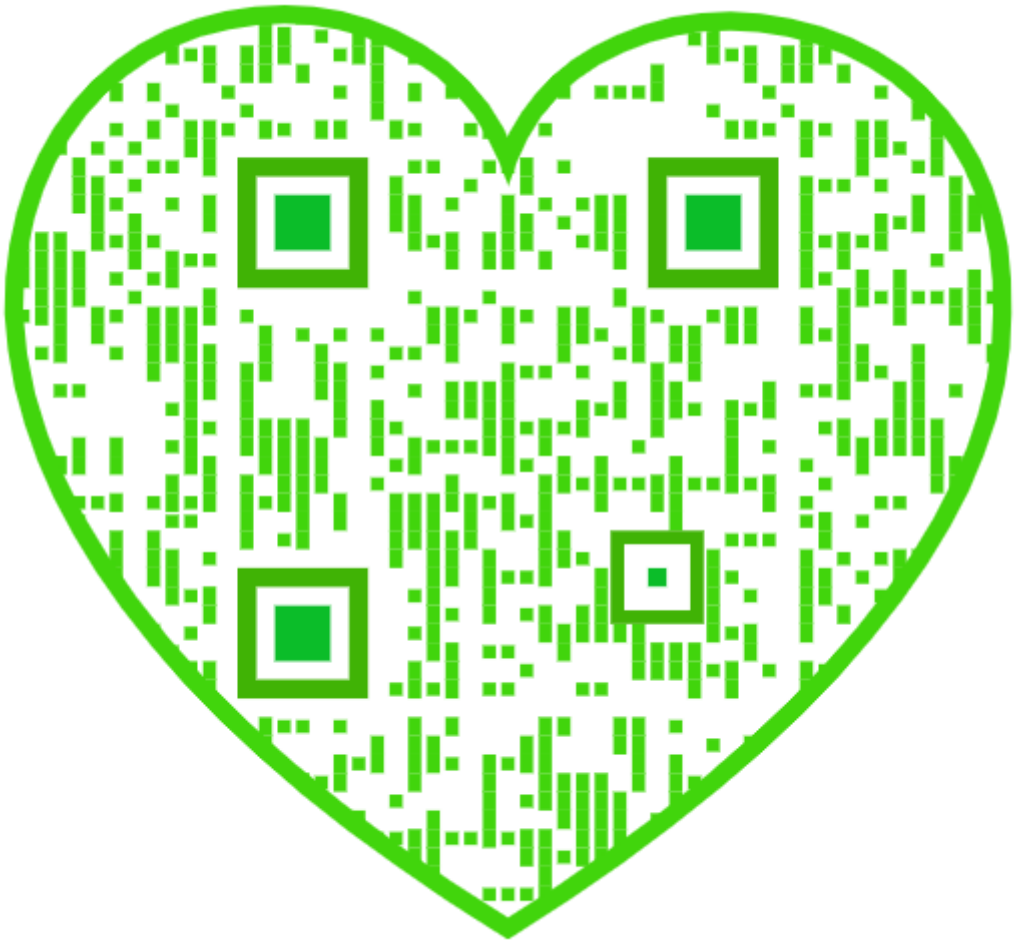

Flax Industry---No. 2.

The principal species of flax, in addition to the *Linum Usitatissimum*, are the following:—*Linum Augustifolium*, a blue-flowered flax, indigenous to Brittany and Languedoc in France. By careful cultivation it can be made to afford a marketable fiber. *Linum Maritimum*, a hardy variety, with yellow flowers, grows in the south of Europe in places contiguous to the sea. It is capable of furnishing a fair fiber. *Linum Hirsutum*—an ornamental plant with blue flowers, cultivated in gardens. *Linum Suffructicosum*—grows in France and Spain in sterile places. The flower is purple and the plant semi-tropical in its nature. *Linum Narbonense*—a highly ornamental plant, with large blue flowers. *Linum Gallicum*,—the most common species of the flax family growing naturally in the countries of Southern Europe. It is not employed for any economical purposes. *Linum Perenne*.—The Siberian flax; this flax differs from the other species of the order, inasmuch as it propagates itself from year to year, by means of its root; the stalk is long and stout, and the fiber coarse. Its introduction and cultivation in the flax growing countries of Europe has several times been attempted, but with indifferent success. *Linum trygnum*, a yellow-flowered flax; and *Linum Quadrifolium*, with blue flowers, are both sub-tropical species, indigenous to Southern Europe. *Linum Catharticum*.—White flowers, used medicinally.

A notice in this connection of the botanical characteristics and history of the *Phormium Tenax*, or New Zealand Flax Lily, will not be inappropriate, although the species is not of the order Linaceæ. The plant was discovered on the Islands from which it derives its name, by the celebrated navigator Cook, on his first voyage. The report of its immense utility among the natives of the Islands where it grows spontaneously, and the great beauty of its fiber, immediately directed attention both in England and France, to its probability of introduction and acclimation in Europe. In 1791, Labillardiere started as a botanist in the expedition of d'Entrecasteau, designed to seek the long lost La Peyrouse, and returned to France in 1798 with a collection of plants of the New Zealand Flax Lily. When in sight, however, of the French coast, the vessel with all the collections was captured by an English frigate. The plants were sent to the National Garden at Kew, from whence, after some little time, Acton, the director, remitted a single shoot to Thouin, at the *Jardin des Plants*, at Paris. Thouin, deeply impressed with the great importance of this single plant, distributed all its progeny as fast as they appeared, to many different portions of France, and in this way the *Phormium Tenax* has become widely distributed and acclimated in that country. The natives of New Zealand obtain the foliaceous fibers from the green leaves of the flax lily by simple scraping only, with muscle shells and and their finger nails, and thus far, this simple process furnishes fibers, both stronger and more beautiful than any more complicated process devised by Europeans. The strength of the fiber of the flax lily, compared with that of common flax and hemp has been ascertained to be as follows:—New Zealand Flax 23¾; common hemp, 16⅓; common flax, 11¼. The relative strength of silk is expressed by the No. 24.

In 1827 an English company spent much time and capital in attempts to make use of this plant; it is said that they could not succeed sufficiently in freeing it of resinous matter to admit of weaving easily. In France this difficulty seems to have been overcome.

The New Zealand Flax Lily grows wild in the greatest abundance on its native islands and in the South of France to some extent. It has also been introduced into South Carolina and various portions of the Southern United States. Specimens can readily be obtained in the vicinity of Charleston, S. C. For the last twenty years, New Zealand flax has formed an article of commerce, but in small quantities, being only that prepared by the natives and sold to trading vessels which have collected it along the coasts. The flax is contained in the leaf of the plant, and is covered by a thick green cuticle. During the past year the Council of the New Zealand Society, in view of the almost unlimited abundance of the plant, have, through the Colonial Department of the British Government offered a premium of fifty guineas to any person "who will furnish them with modes of operation, or models or specifications of machinery, by which the flax can be dressed at a cost not exceeding five pounds per ton, reckoning the wages of an ordinary laborer at 4s. per diem, and of artizans at 6s. to 6s. 6d."

The other plants best known for their supply of cortical fibers allied to the flax, are the *Urtica* (*Nettle*) and the two species of *Cannabis*, (Hemp.) In the nettle plants yielding fiber, the stalks are slightly woody, and grow to the hight of three or four feet. The upper surface of the leaves is green, the lower white, and covered with a short soft down; the flowers are arranged in little auxiliary groups. This plant was originally from the East Indies, where it is cultivated to some extent for its fiber. One hundred and eleven species of this family are recognized by botanists, of which forty-seven are Indian. The *Urtica Tenacissima* of Roxburgh, is the most useful species and is cultivated by the Malays for the sake of its fibers, of which they make their fishing nets. The plant grows from cuttings, and the fibers are exceedingly strong and fine, but the cleaning is a tedious process. Everybody is acquainted with the effects of the sting of the common European nettles, but they can hardly form an idea of the consequences that arise from handling some of the Indian species. Prof. Lindley mentions a striking example in the case of M. Leschenault, who describes the effect of gathering the *Urtica Crenulata*, in the Botanic Garden of Calcutta. "One of the leaves," says M. Leschenault, "slightly touched the three first fingers of my left hand; at first I only perceived a slight prickling, to which I paid no attention. This was at seven in the morning. The pain continued to increase; in an hour it had become intolerable; it seemed as if some one was rubbing my fingers with a hot iron. Nevertheless there was no remarkable appearance, neither swelling nor pustule, nor inflammation. The pain rapidly spread along the arm as far as the arm-pit. About noon I experienced a painful contraction of the back of the jaws, which made me fear an attack of tetanus. I then went to bed, hoping that repose would alleviate my suffering; but it did not abate; on the contrary it continued during nearly the whole of the following night, but I lost the contraction of the jaws about seven in the evening. I continued to suffer for two days, and the pain returned with full force when I put my hand into water. I did not finally lose it for nine days." There is also a nettle of Timor, called *daoun setan*, or devil's leaf, the effects of which are said by the natives to last a year, and even cause death itself.

Cannabis (Hemp), a variety of plant included in the nettle family of Jussieu. Their distinguishing characteristics are, dicecious flowers, seed contained in a single horny capsule, globular, and recovered by a cup, and containing a single grain.

Two species are recognized as belonging to this family:—*Cannabis Sativa*, (cultivated hemp), stalk straight, simple, slightly quadrangular, and slightly hairy; grows to the hight of four to seven feet, and sometimes more. The flowers in the male plant are arranged in the axles of the superior leaves, in little groups, of a greenish color; in the female the flowers are equally auxiliary, but not readily discernible. The cultivated hemp is an annual plant, and grows naturally in India and Persia.

Cannabis Indica (Indian hemp); this species differs from the common hemp in the fact that it grows to double the hight, and even more. It is a native of the East Indies. At the French Industrial Exhibition in 1849, there were exhibited two stalks of this variety of hemp, one twenty-six feet, the other nineteen and three-fourths feet in hight; to one of the stalks was attached a white handkerchief, tolerably fine, made from the fiber of this species.

Various other species of plants and trees are known, whose cortical fibers are capable of being used for textile purposes, as the linden, &c. Pliny also states that the Romans made use of ropes manufactured from the broom-plant, the fibers of which were capable of resisting the action of both salt and fresh water.

Two new fibers, worthy of notice, have been recently brought before the American public—the *okra* fiber, and the fiber of the *Asclepias Candensis*. The first is derived from the well-known okra or "gumbo" plant of the Southern States, by means of a process, patented in 1852, by Mr. Jean Blanc, of New Orleans. The appearance of this fiber is attractive, somewhat resembling "Manilla Hemp." It is, however, wanting in strength, and is extremely brittle. The okra plant grows in great abundance, and can be made to yield three crops per annum.

The fiber of the *Asclepias Canadensis*, or the "Cottomer, or wild asparagus of Canada," was first exhibited to our knowledge, at the New York Crystal Palace, of last year, among the contributions from the British Possessions, by Hon. G. Joly, of Lotinbinere, Canada East. This fiber was strong, looked exceedingly well, and would compare favorably with flax of good quality. The quantity on exhibition was limited to a small sample.

The Red Sulphate of Indigo.

The following is a very interesting article to practical chemists, on the use of sulpho-purpuric acid, in the dyeing of worsted and silk, by E. Heffely, chemist of a calico printworks near Manchester, Eng., and communicated by him to the Lomdon "Chemical Gazette:"—

"I take the liberty of drawing your attention to a new fact, demonstrated in the successful application on worsted and silk of the red sulphate of indigo (the phenicine of Walter Crum).

This chemical compound is produced by the action of sulphuric acid upon indigo, and by throwing the mixture thus obtained into a large quantity of water a few minutes after the contact.

By this means a red-colored precipitate is formed, which, when well and thoroughly washed on a filter, represents the red compound in question, a very different production from the blue sulphate of indigo in its composition, properties, and as regards the shades produced by it.

I have been able to produce, with this red sulphate of indigo, shades superior in all respects to those obtained by the employment of the ordinary indigo extract, imitating the prussian blue, and likewise purple shades bearing a resemblance to those produced by the use of logwood and cudbear, which shades, I should observe, cannot be obtained from the commercial indigo carmine (or extract).

Patterns dyed with this red extract of indigo have been highly approved by the judges appointed by the "Societe Industrielle de Mulhouse," who gave the preference to the blue and purple colors obtained by the use of this red compound, which dye material has been introduced into commerce, and is actually applied in several dyeing establishments of the neighboring county of York.

I will now enter into a few details respecting the chemical nature of these two sulphates.

Upon an examination of the formulæ of the two bodies referred to, it will be found that the blue indigo extract is, properly speaking, a hyposulphate of dehydrogenized indigo,—

$$S2_2O5 + N\,C16\,H4\,O3$$

(the formula of indigo being N C16 H5 O2); whilst the red compound is a sulphate of indigo,— SO3, HO + NC16 H5 O2.

Upon a comparison of these two formulæ it will be remarked, that in the case of the blue indigo extract, the indigo in the sulphuric acid have undergone remarkable alterations; the indigo having lost a portion of its hydrogen, and the sulphuric acid a portion of its oxygen, and these two elements, hydrogen and oxygen, having united to form water. But in the case of red sulphate, the indigo and the sulphuric acid have entered into combination without undergoing any change.

As in the composition of this red sulphate the coloring matter is, or appears unaltered, I was induced to entertain the supposition, that it might be beneficially used in dyeing, for the purpose of obtaining fast blue directly,—an operation which might probably replace with advantage the process of obtaining fast blues from vats.

A circumstance which is in favor of the possibility of fixing this indigo on fabrics in a state of indigotine is, that some organic substance (such as sulphovinic acid, sulphoglyceric acid, and other sulpho-acids) possess the property of being decomposed and resolving themselves into their primitive constituents by a simple ebullition in water. This red sulphate of indigo may be ranked in that type of organic bodies, where it figures under the name of sulpho-purpuric acid. As it ought to partake in every respect of all the properties of the series of compounds mentioned, it should necessarily, on its ebullition in water, decompose into free indigo on one side, and into free sulphuric acid on the other. Consequently I presumed that my introducing fabrics into the vessel where the process was going on, and at the moment of the separation of the coloring matter, I could fix this color upon the fabrics so introduced. But the first experiment I made, with the view of proving the practicability of the supposition, did not turn out to be satisfactory as regards the dyeing of cotton, whilst the worsted and silk, took off and successfully retained the coloring matter.

I made three consecutive trials on the occasion,—the first in a neutral bath, the second in an acid bath, and the third in an alkaline one; but in all the three attemps, so far as the cotton was concerned, the result was not successful.—Hence it appears that cotton has no affinity for this indigo. But silk and worsted may be effectually dyed in the way I have indicated, if the bath be only kept a little acid; I prefer the use of a few drops of muriatic acid. As I have already observed, some of the patterns imitate the prussian blue; and those washed in soap or alkaline water resemble the purple produced from logwood and cudbear, which shades could not up to the present time be produced by the employment of indigo alone.

A question which it will now be worth while particularly to inquire into is this,—whether the blue appears on these fabrics as indigotine or as sulpho-purpuric acid, or as a modification of one or the other.

I incline very much to the opinion that it is a modification of the indigotine, or of the sulpho-purpuric acid itself; for I found that the sulpho purpuric acid, in contradiction to the opinion generally entertained, is an intense red compound, and not an intense blue one, when dried. Nevertheless, upon examining the patterns dyed with this red compound, it is found that they are blue, and not red; and those washed with alkaline water are purple, an effect which is not produced by indigotine.

I have not yet been able to solve this question, and for the present only call attention to the new shades obtained by the employment of sulpho-purpuric acid, viz., the indigo-blue, resembling prussian blue; and the indigo-purple, similar to the shades obtained by the use of logwood or cudbear."

Soldering Cast Steel.

I saw in a recent number of the "Scientific American" an answer to a correspondent relating to the soldering of cast-steel. For his benefit and that of others I send you the following:—

Put one pint of muriatic acid in an earthen vessel that will hold at least one quart, into this drop small bits of zinc until it will dissolve no more; then add half an ounce of muriate of ammonia, and boil the whole about three minutes. Apply a little of this solution to the intended juncture of cast steel, and soft solder will flow over the parts as readily as on tin plate, providing always that the metal has been previously well cleaned of oxyd. I believe this is commonly known among tinsmiths, though not generally with other individuals, whom it would no doubt benefit much. Cast-steel, cast-iron, or any other metal in common use is readily soldered with this mixture.

MARCUS MASON.

Coustoutan, Mich.

While boring the Artesian well in New Orleans, the auger struck upon the trunk of a cypress tree lying at a distance of 150 feet below the surface of the ground, and also below several firm beds of blue clay, one of which was over thirty feet in thickness.

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[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING MARCH 16, 1854.

COFFEE POT.—J. McGregor, Jr., of Troy, N.Y.:—I claim having the pot where the tea or coffee is prepared air-tight, and so regulating the heat that is applied to the heating of the same, that a small pressure by the covers prevents it from boiling, and consequently from evaporation, while the tea or coffee is being prepared, as set forth.

SEED PLANTERS—Elbridge Marshall, of Clinton, N. J.: I do not claim the rotating hoppers with perforated bottoms; neither do I claim any peculiarity in the furrow and covering shares, nor the movable frame to which they are attached; nor do I claim the cams irrespective of their peculiar construction,

But I claim, first, the cams, C E, having two rows or sets of inclined planes upon their faces, said inclined planes being placed oppositely on concentric circles, for the purpose of creating an equal pressure upon the cam E, with suitable gearing, as shown, whereby its position upon the shaft may be changed and the seed dropped at a greater or less distance apart whenever the crank is operated or turned by the hand, as described.

Second, I claim the bar performing, in combination with the circular plates underneath the hopper, the office of a valve, and simultaneously rotating said hoppers by its vibrating motion; the above parts being arranged and operating as described.

[We believe this to be a very good improvement.]

MILLS FOR GRINDING ORES, &c.—Wm. Ball, of Chicopee, Mass.: I am aware that crushing machines have been made similar in some respects to mine, viz., in the use of balls made to revolve by means of a flat plate or disc resting upon the top of the balls, and this disc loaded so as to give crushing force to the balls, and to these devices I lay no claim.

But I regard my invention and improvement as consisting chiefly in the manner in which I apply pressure to the balls.

I claim, first, the mode as described, of applying pressure to the balls, that is to say, making the pressure diagonally or obliquely to the line or axis of the pressing shaft, or obliquely to the vertical diameter of the balls, as a distinct feature from that which is known as the turn-table machine, where the pressure is on the top of the balls, this oblique pressure being effected by the curved central driver or its equivalent, as set forth.

Second, I claim the rocking step in combination with the oblique pressure upon the balls, as set forth.

Third, I claim making such screen with a conical head, having the lower or conical surface the screening part, for the purpose specified.

SEED PLANTERS—Thomas Carter, of Laurens District, S. C.: The cylinder or seed wheel with the frame attached to it for the horse to pull it by, and the covering scrapers to cover the seed have been patented heretofore.

What I claim, therefore, is the seed discharging apparatus in the periphery of the seed wheel, the tube or apparatus, the escapement wires, and the protecting spring valves, as described.

IRON BUILDINGS—Stephen Colwell, of Philadelphia, Pa. I claim the mode of constructing the skeleton walls of buildings of any desired thickness, by placing vertically upon each other rectangular frames or hollow squares of cast-iron, and sections of the same like bricks or blocks of stone, but not breaking joints as in laying brick or stone, the said frames being connected together and leveled, as described, the skeleton wall being separate from the covering of the building, but adapted for receiving on its exterior or interior surface a covering of plates of iron or other suitable material, removable at will.

SEWING MACHINES—Samuel J. Parker, of Ithaca, N.Y.: I claim that combination that secures to me the relative position in which I place the needle's eye to the movement of the material or feed motion, and the position of the shuttle and its race, resulting therefrom, when the needle is straight and the table on which the material is to be sawn is horizontal, said relative position meaning the longitudinal axis of the shuttle and its race, at right angles to the feed motion, and the consequent position of the needle's eye therefrom, so that a line drawn through the needle's eye, when in the act of passing the center of the material sewn, shall coincide with the line of feed motion, not be at right angles therewith and this for the purpose of rendering the stitch more nearly straight and perfect than it otherwise could be, the combination and purpose being as described.

RAT TRAPS—Hiram Stafford, of Mount Pulaski, Ill.: I claim the combination of the tilting board with the swinging forks and their apparatus, for the purpose and in the manner set forth.

BRICK MACHINES—T. E. Seay, of Columbia, Va.: I claim the vertically moving knives arranged as described, in combination with the levers and slides, whereby the the molded bricks are separated from the mass of clay, at the same time that the molds are raised from their recess, for conveying away and discharging the bricks, as set forth.

I also claim the employment of the gratings, as described, between the mill and molds, for screening the clay from stones and other hard substances, when this is combined with the exterior chamber, into which the stones and other substances are forced by the action of the clay, as set forth.

STREET GAS LAMPS—Wm. A. Shaw & George Parker, of Boston, Mass.: We claim as a substitute for the stop-cock to stop the passage of the gas, the described cap, lined with vulcanized rubber or other proper material, which cap fits air-tight over the mouth of the burner, as set forth.

FISH HOOKS—Henry Sigler, of Houston, Texas: I claim making the top portion of the hooks elastic, and so attaching them to the vertical guide piece, that they will be made to act as springs for giving action to the hooks and forcing them together, and also serve with the arms to form a toggle joint for forcing said hooks apart, and retaining them set for a given time, and in combination with the above, employing a common bait hook, which is attached to the lower end of the regulating slide, and so situated that its end will be some distance above the ends of the spring hook, and consequently the fish or animal will have to pass his head between the spring hooks to reach the bait, and in drawing upon which, he will draw the toggle arms out of a horizontal position and simultaneous therewith operate the spring hooks which, by their elasticity, are caused to take into the body of the fish and hold it perfectly secure, there being no chance of his escaping, owing to the peculiar action of the hook, it biting harder upon its object when the strain is greatest, as described.

[A notice of this invention is published on page 44 of this volume.]

MACHINES FOR CLEANING COTTON—Charles Leavitt, of Buincy, Ill, (assignor to S. R. Cockrill), of Nashville, Tenn.: I claim my method of arranging the several parts involved in extracting the motes, dust, and other impurities from cotton, previous to and preparatory for ginning the same, as described, that is, combining a wire screen concave with a revolving wire screen cylinder, or their equivalents, and a wind wheel or fan, revolving within the cylinder, both cylinder and concave being armed with teeth set in ribs, so distant apart with regard to the teeth, as to permit the cotton seed to pass, while the fiber alone is loosened, the revolving screen running slowly in comparison with the wind wheel, which is driven at great velocity, thereby adapting the machine to the particular purpose specified, viz., frecing cotton from motes, dust and other impurities while attached to the seed, previous to ginning the same.

SEWING MACHINES—James Harrison, Jr., of Milwaukie, Wis.: I claim, first, the combination of the spring, the roller, and the screw or adjustable pin, operating in the manner described to prevent the delivery of the needle thread for the successive stitches until each preceding stitch is drawn to the desired degree of tightness, and then to cause sufficient to be given out for the next stitch, thus regulating the tightness of that part of the stitch formed by the needle thread.

Second, I claim the combination of the drag bar, attached to the shuttle, and containing the eye through which the thread passes therefrom, the spring for throwing the said bar into a position to prevent the delivery of thread from the shuttle, and the adjustable liberating piece, operating as described, for the purpose of preventing the delivery of thread from the shuttle until after each stitch is finished, and then allowing only the quantity desired to be given out, whereby the tightnees of that part of the stitch formed by the shuttle thread is perfectly regulated.

Third, I claim constructing the shuttle in two parts, viz., the shell and cap, of which the latter is inserted into and withdrawn from the former endwise, as described.

[This is one of the many ingenious improvements which have been made in sewing machines. The importance of this class of machinery to the community is incalculable.]

RAT TRAPS—Jose Toll, of Locust Grove, Ohio: I claim the combination, as described, of reciprocating and self-locking partitions and floor, in connection, as described, with the weighted crank, which, on the liberation of the catch alternately opens and closes the entrances of the chamber and of the cell.

TRUSSES FOR IRON BRIDGES—G W. Thayer, of Springfield, Mass.: I claim combining or arranging, as described, a series of interlocking and overlapping metallic arched beams, a series of vertical suspension tie bolts extending from the lower chords to the crowns of the arches of the metallic arched beams, and a series of struts or tie bolts, extending from the lower to the upper set of chords, the whole, as set forth, constituting a truss having great strength and advantages, as stated, and made with long arched beam to extend over and embrace two or more of the arches.

REVERSIBLE LIFE BOATS—Nathan Thompson, Jr., of Williamsburgh, N. Y.: I intend to use any known kind of life boat, provided its bottom be taken out, and then when my bottom is applied thereto it will constitute my invention.

I do not claim a boat whose bottom is secured near the middle of its hight or depth, nor one whose bottom slides up and down from the lower to the upper edge of the sides, and vice versa. Neither do I limit myself to the use of any special materials in constructing my extensible bottom or bracing thereto.

But I claim, first, the extensible bottom, which may be stowed within the boat or when in use, drop below either side of it, constructed and applied to a life-boat, as described.

Second, I claim in combination with such an extensible bottom, the diagonal bracing cords applied as set forth.

LUBRICATOR—John Webster, of New York City: I claim the combination of the divided chamber with a three-way cock, one position of which admits oil to the chamber, but shuts off the steam; the other position shuts off the oil, and allows the steam to pass from one partition of said chamber to the upper surface of the oil in the other, for the purpose specified.

BORING AND MORTISING MACHINE—Henry Allen, of Norwich, Conn.: In combination with a boring tool of the above peculiar kind, or one in which the diameter of its bore diminishes in proportion to the wear or reduction of the tool by the process of sharpening it, I claim the two adjustable stops or their equivalents applied to the frame or ways that support the feeding carriage and made to operate in any one of the mortise recesses thereof, the said stops being not only for regulating the amount of movement of the feeding carriage required while a mortise is being made by the boring tool, but also to compensate for the wear of the tool, as stated.

And I also claim the adjustable shifting catch in combination with the adjustable gauge or slide plate provided with a recess and screw, as specified, the same being particularly for the purpose of readily centralizing the boring tool, as stated.

COMBINATION OF FOOT STOVES AND LANTERNS—Francis Arnold, of Haddam, Conn.: I claim the movable grate attached to the handle, in combination with the foot stove and lantern, as specified.

[This invention is noticed on page 60, this volume of the Sci. Am.]

IRON FRAME UPRIGHT PIANOFORTE—S. P. Brooks, of Boston, Mass.; I claim an upright piano, in which the iron frame that receives the strings is curved or arched, so as to prevent the breaking or springing of the said frame by the strain of the strings, and so arranging said iron frame as to make it serve for legs, and the support of the main parts of the instrument, as set forth.

I also claim placing the whole of the action level with or below the line of the keys, so as to avoid the necessity of casing the top of the piano, as set forth.

I also claim giving the blow to the hammer, and then holding it after the blow is struck by means of the triangular piece and its notch, operating with the rod, as described, and so arranging the action in an upright piano as to give the blow upon the strings in a direction from the sounding board, as specified.

ATTACHMENT FOR FISH HOOKS AND ARTIFICIAL BAITS—J. T. Buel, of Whitehall, N. Y.: I claim, first, preventing the points of fish hooks catching in snags and weeds while trolling, by means of a spring which is attached loosely to a hook or artificial bait, and provided with a stay or support to rest or bear upon whilst sprung against the inner side of the point of the hook. The said spring, by reason of its elasticity, remaining in connection with the point of the hook, until it is struck by a fish when it disconnects itself from the point of the same, and allowing it to perform its duty, as described.

Second, I claim arranging a spring catch on the concave side of an artificial bait for retaining the said protecting spring in its place, and out of the way when not in use, as described.

Third, I claim providing the lower extremity of artificial baits with a tube, which terminates in an eye, so that they may be used with a single or double hook and with or without the spring protection, the tube serving for the shank of a single hook to be secured in, and the eye for a double hook, as described.

[Mr. Buel is a capital hand at "trolling" for the finny tribe, and knows very well what will "take them in." His "baits" are well known to the public.

DRESSING FLAX AND HEMP—L. S. Chichester, of Brooklyn, N. Y.: I claim the combination of the series of twisted or spiral and conical-shaped blades on the two rotating stocks, as specified, which, by reason of the twist and conical shape, perform a beating action on the fibers at one end, and gradually change until they perform a scutching action at the other end, as set forth.

I also claim, in combination with the rotating twisted and conical shaped blades, the casing which surrounds them, with the discharge pipe at one end, to confine and direct the current of air which is induced by the rotation of the twisted blades towards the discharge spout, for the purpose specified.

SWELL-MUTE ATTACHMENT TO PIANOFORTES—A. G. Corliss, of Portland, Me.: I claim controlling the vibration of the sounding-board by means of what I have hereinbefore termed the "mutes," which are so arranged and actuated as to be capable, when desired, of pressing upon the bridge with any degree of force necessary to produce the tone desired, as described.

[See engraving of this improvement on page 132 of this Vol. Sci. Am.]

DOOR HINGES—John Elgar, of Baltimore, Md.: I claim making the joint of door or gate hinges a series of varied inclined planes or curves, which accelerate and retard, as described, the movement of the door or gate, in closing by its own weight, as set forth.

EARTH CARS—R. H. Emerson, of Chicago, Ill.: I do not claim the invention of a car with hinged or turning flaps in the bottom, for discharging earth or other materials; nor do I claim raising or lowering such doors or flaps by means of a windlass and chains or of securing them and working them by means of crank shafts and catches; nor do I claim the attachment of a leveling plate or scraper to a carriage, for the purpose of spreading the earth dropped from the cars, as these devices have all been used before.

But I claim the construction of a long car, arranged as described, with two sets of doors in the bottom of different breadths, which, in combination with the chains, axles, and crank shafts, and the attached leveling plate enables me to discharge and spread nearly one half of the load without discharging the whole, and to equalize the quantities of earth dropped by disengaging the different sets of doors, which could not be done if the doors were of equal width, and only one half of them dropped at one time.

PIANOFORTE ACTIONS—Alexander Hall, of Lloydsville, Ohio: I claim, first, the arrangement of the bridges of the upper octave strings in combination with the shifting action, so that the nodal points of these strings may coincide with those of the normal strings, in the manner set forth.

Second, I claim the mode of shifting the action by pivoting the key-board in combination with the employment of upper octave strings, as set forth.

Third, I claim making the hammer heads of hard and soft material for the purpose of playing with effect upon the upper octave and normal strings with the same hammer head.

[This is the second improvement in pianos which Mr. Hall has secured by patent. Foreign patents are in rapid progress through the "Scientific American Patent Agency."

[For the Scientific American.]

Which is the Best Water Wheel?

In the "Scientific American," of April 1st, page 130, in the article on water wheels, are the following words:—"The class of motors actuated by percussion, termed *Undershot Wheels* have very properly gone out of use, and will be passed over without notice." Now sir I would state, that on the stream in this place, there are seven grist mills, all of which used undershot wheels, from the time they were set in operation until about seven years ago, when the owner of the first mill, with a 7 ft. fall, took out the old wheel, (although not worn out), and put up a breast wheel; but it failed to give as much power as the old undershot. Not satisfied, he took it out and put up an overshot, and for the same cause it shared the same fate, and then to be sure of being right, he next put up a turbine, which is now running at the present moment, but its owner asserts that it also does not do as much work as his old undershot.—His experience is certainly entitled to respect. The millwright is still living who did most of the work in five of the mills, and he owns one himself, which has an undershot wheel. If there is a wheel that will give more power than those used here, there is plenty of capital on this stream to try it. My father is the owner of one of these mills. When purchased, it was driven by two turbines, but desiring to use the very best wheel, he journeyed through various States for forty days and spent $400, in making examinations and gaining information on the subject. At last he made up his mind to try a new turbine, and had one constructed by a maker in the northern part of this State. It cost $4,000, and took 18 months to get it in, and I must say it does not do one-fourth the work which was promised for it. A number of millwrights have examined it at work, and so has the former owner of the mill, and they have all denounced it as a complete failure.

On the fifth mill on this stream,—fall 6 ft. 6 inches—they have two wheels, an undershot, and overshot, and the former does one-fourth more work than the latter with the same water. This has been actually demonstrated. I know of at least a dozen mills that have thrown out iron wheels because they required so much water.

W. F. O.

Hempstead, L. I., N. Y.

[For the Scientific American.]

Sawing, and Saw Mills.

Having been a lumberman for many years past, both here and at the north, and desiring to put into our mills here, the best machinery in use, I took a tour to the State of Maine, thence to Canada, and northern New York, and patiently examined all the best mills in these regions. Being a millwright by trade, I found nothing to compare with what is termed "the line-log gang," as used in Maine and manufactured by Messrs. Hinkley & Egey, of Bangor. These mills, for strength and utility in every way excel any mill in the country.—They are a roller gang, consequently there is no time lost in gigging back, nor in putting on the logs, nor yet in taking off the lumber when sawed; one log follows through after another, the same as the plank in a Woodworth planing machine, and with something like the same speed. The logs pass through whole, without any regard to length. The lumber is then edged up by a circular saw, consequently the logs yield a much larger amount of lumber, than when sawed in the common way. Gang saws are also very thin and cut away very little stuff. These mills are generally run with a velocity of from 150 to 175 strokes per minute and fed from ½ inch to ¾ inch per stroke. They cut the enormous quantity of from 40 to 50 M feet of boards in 12 hours. I am acquainted with what is called "the yankee gang," and circular saw mills of every description, and must say that I do not know of any mill that holds any comparison to the "line-log gang," for getting out good lumber in the most economical manner. The cost of manufacturing lumber by such mills is about 75 cts. per M feet.

J. B. ARMSTRONG.

Hamilton, N. C., April 7.

Something More About Gilding Metals,

GILDING ON IRON AND STEEL—Elsner showed, in 1841, that steel pens may be heavily gilt, by first removing their blue coating by dilute muriatic acid, and then dipping them into a solution of chloride of gold rendered alkaline by carbonate of soda. Schoppler gives the following method for coating larger articles. (Polytech. Notizbl.) The surface of iron or steel, being brightened by the file, and coated with lac-varnish, those portions to be gilt are freed from the lacquer, etched by dilute sulphuric acid, dried, and dipped into a very dilute solution of blue vitriol until they are coated with copper. The metal is then dipped into a solution of 100 pts. gold in 13,000 pts. water, to which 370 pts. carbonate of soda are added.—The gilding may be polished.

FIRE-GILDING OF WROUGHT AND CAST-IRON, AND STEEL—This operation, readily performed on bronze and copper by amalgamating their surface, has not been applied to iron, on account of the difficulty of amalgamating its surface; but R. Bottger has contrived the following good method of effecting it. A mixture is made in a porcelain vessel, of 12 pts. mercury, 1 pt. zinc, 2 pts. copperas, 12 pts. water, and 1½ pt. muriatic acid of spec. grav. 1·2. The article of iron or steel to be gilded is introduced into this mixture, which is then heated to boiling, and in a short time is again withdrawn, covered by a shining coat of mercury. It is now ready to receive the amalgam of gold or silver for the purpose of fire-gilding (Pogg. Annal. 1846). The strongly positive zinc amalgam increases the electric tension between the positive iron and negative mercury, so as to cause their union.

GILDING WATCH-WHEELS—Ph. Plantamour prepares an amalgamating fluid for gilding wheels of watches, which, being alkaline, cleans and amalgamates the wheels at the same time, without injuring the steel pivots. Mercury is dissolved in an excess of nitric acid, and ammonia added to the solution until the precipitate at first formed is redissolved. The wheels being immersed in this solution, the ammonia dissolves fatty matters, with other impurities, from the surface, and the brass is amalgamated.—While still moist, the wheels are covered with gold amalgam, put on a drum with holes for inserting the pivots, and gently heated over a spirit lamp, so that the quality of the steel is not impaired.—[Comptes Rendus.

Paper for Newspapers made of Straw.

The paper which the "Ledger" is now using is the result of experiments in the use of straw as the principal material of which the paper is composed. This paper is made by Feinour & Nixon, at their paper mills in Manayunk. It is made by what is called Mellier's process, which has been recently patented, and by which it is claimed that paper for printing can be made from almost any vegetable fibrous substance. One of the difficulties of straw paper heretofore has been to make it white enough for printing purposes. This is now done by a process of bleaching, of which Mr. Mellier is the patentee.—[Philadelphia Ledger.

The paper made from straw upon which the "Ledger" is now printed, looks very well, still there are quite a number of yellow straw specks in it, and on the whole it has not so good an appearance as that made from rags. We have no doubt, however, but future improvements will make it equal to common rag-made paper. We never could conceive why any difficulty was to be apprehended in bleaching straw pulp, for we had seen it made as white as cotton pulp many years ago.

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New Inventions.

Making the Wool on Sheep to Grow, &c.

Stowel H. Dimick, of Ypsilanti, Mich., has discovered a new compound for coating sheep. It is well known to all wool growers that during the first eight weeks after sheep-shearing, the wool will be very thick near the skin of a sheep if it is in a healthy state. But the great transition which a sheep undergoes from being deprived of a heavy coat of wool, especially if damp and chilly weather comes on afterwards, has the effect of closing up the pores of the skin, thereby preventing the proper animal secretions, and causing the skin to become parched and dry, and thus frequently injure the health of the animal. In a large flock of sheep this entails a severe loss, especially as it may be considered that four weeks are lost to the grower, in the growth of wool after shearing, unless the weather is peculiarly favorable, which is seldom the case. The composition mentioned, for which Mr. Dimick has taken measures to secure a patent, is to be applied to sheep immediately after they are shorn, to prevent the evils mentioned, and at the same time protect the animal from both the scorching rays of the sun and the injurious effects of storms. At present we do not deem it prudent to tell what the compound is; we can only say that it is compounded of quite a number of substances, and the discoverer states that it is the result of a great number of experiments.

Improved Gold Amalgamator.

Robert H. Collyer, of New York City, has taken measures to secure a patent for a useful improvement in gold amalgamators. It consists in the employment of one or more cylinders which are fluted longitudinally in such a way—or are furnished with buckets of such a form that, as they rotate within concave amalgamating vessels, containing mercury, and receive a supply of water to cause a constant overflow, they will take up a quantity of the mercury on their rising side, and discharge it on their descending side. The crushed quartz, or gossan, is supplied to the amalgamating vessels by inclined planes in such ways, as to meet the mercury as it is discharged from the flutes or buckets, on the descending side of the cylinders, and is carried through the whole body of mercury in the amalgamating vessels by the flutes or buckets which agitate the mercury so as to bring it and the mineral in diffused contact, and thereby facilitate the amalgamation. The unmetallic matters are carried off with the overflow water.

Fire Arm Charger.

T. H. Peavy, of South Montville, Me., has taken measures to secure a patent for an instrument for charging fire-arms. This invention consists of a cylinder which contains several chambers arranged in a circle around its axis, and nearly corresponding in size with the bore of the barrel to be charged. And it is so confined between two plates and combined with a muzzle of the barrel, that all but one of the chambers can be charged with bullets and loose powder, and carried closed, until the charges are required for use, when the muzzle-piece may be placed on the barrel and one of the charge chambers brought into communication with it for the purpose of lodging the contents of the chamber into the barrel.

Water Wheel Gate.

Hartwell L. Turner, of Strykersville, Wyooming, N. Y., has made an improvement in constructing head gates for re-action water wheels, for which he has taken measures to secure a patent. The improvement consists in hanging the gate on a hinge at a certain part, and beveling it at another part, whereby, it is stated, it is more easily opened and closed than other head gates now in use.

Railroad Signals.

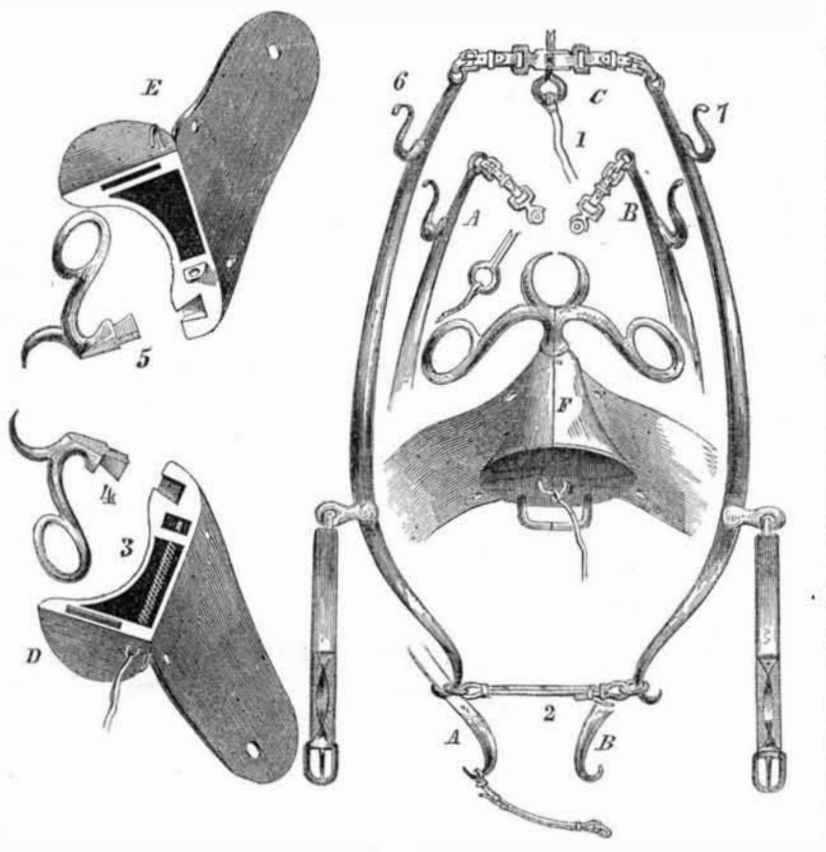
Alexander Gardener, of Byron, N. Y., has invented an improvement in railroad signals.—The nature of the invention consists in a day and night railroad signal to be placed at crossings, to give warning to travelers of the approach of a train of cars from either direction. It is so constructed and operated, that it is made to revolve by the action of the locomotive itself, sometime before it arrives at the crossing. It thereby attracts the attention of passengers who may be travelling towards the crossing, and this makes them stop until the train has passed, after which the signal adjusts itself and is ready for the next train. Measures have been taken to secure a patent.

Cistern for Rain Water.

If all the rain which falls in the Northern States within a year should remain upon the surface of the earth, without sinking into it and running off, it would form an average depth of water of about three feet,—in Southern States four feet.

There is not a farmer in our country but could supply himself with an abundance of good water, if he would build spacious cisterns and collect the rain from his barn and out-house roof therein. In many parts of our country, during dry seasons, the farmers have to drive their cattle to a great distance—to some constant river, or lake,—for water. By simply building good underground cisterns they can always have a plentiful supply of water at hand at their own doors.

YELLOTT'S LIFE-PRESERVING HARNESS.



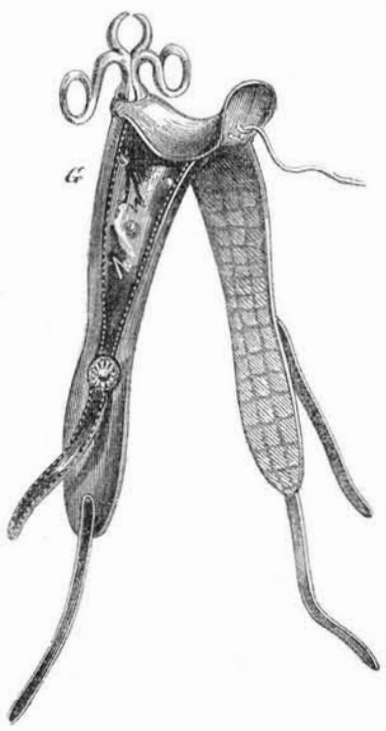
The accompanying engravings represent a new kind of harness, for which a patent was granted to George Yellott, of Bel-Air, Md., June 15th, 1852. The object of this invention is to enable any person seated within the carriage, to detach the horse therefrom by merely pulling a cord, which strips him of his harness.

A and B represent the hames separated; C represents the hames as brought together when fastened over the collar. The hames are held together at the top by a spring bolt passing through a rule joint, as represented by 1, fig. C. At the bottom the hames are made to curve outwardly, and are held together by a strap with rings on the end thereof, which are passed over the curves before the hames are fastened at the top, as represented by 2, same figure.

The saddle tree is of malleable castings, and made in two sections, as represented by figures D and E. The two sections of the saddle-tree are held together by a bevelled pin attached to a spiral spring, and passing through a tongue fitted into a groove, as represented by 3, figure D. The two sections of the cantle are also held together by a pointed tongue and groove, each section having a section of the crupper loop attached thereto, which two sections of said crupper loop, when the tree is fastened together as aforesaid, form the whole loop. The saddle terrets, represented by 4 and 5, figures D and E, are fitted into sockets in the saddle-trees so as to be held firmly in their places, while the sections of the saddle-tree are fastened together, but drop out when they are apart. Figure F represents the saddle-tree when put together; figure G represents another view of the tree with the flaps attached; 6 and 7, figure C, represent the peculiar shape of the hame terrets.

A cord is attached to the spring bolt, 1, fig. C, and a small branch of the same cord being also attached to a loop at the end of the bevelled pin which holds together the two sections of the saddle-tree, said cord is carried back and fastened to the dash-board, or some other convenient part of the carriage. Upon pulling this cord the hames fly apart at the top and drop loose at the bottom. The saddle tree at the same time comes apart and the horse goes off with nothing but his collar, bridle, and reins attached.

In order to prevent the cord from being accidentally pulled by the animal himself, a hollow tube of leather is attached to the breeching, and also strapped by the other end to the dash-board, of such length that when the traces are stretched, the tube is merely slack. The cord is passed through this tube with much more slack than the tube, and is retained therein by



a button on the end of said cord. If the tube is accidentally drawn tight by the animal throwing his tail over it, the cord having much more slack than the tube, is not affected thereby. This arrangement is so easily understood that it is thought unnecessary to represent it.

If a martingale is used it must be in two pieces. The prongs attached to the reins must be fastened to the collar. The part attached to the girth must be fastened to the strap, represented by 2, figure C. It will be observed that the hames, A B, and the saddle-tree are placed for compactness within the hames of figure C, and that the hames, A B, are broken off and then joined below at the bottom of the figure.

It may be proper to say that the delay in bringing this invention fully before the public, has been caused by peculiar circumstances beyond the control of the patentee. One chief cause of this delay has been his great anxiety to have the invention perfect in all its details—so that it could be offered to the public as a practical working improvement. It had been supposed that a separate patent might be necessary to secure the benefit of these subsequent alterations as to matters of detail, but the Commissioner of Patents has decided that no such patent could be granted, as there had been no change of the principle embraced in the specifications of the original patent.

More information may be obtained by letters addressed to Samuel Hunt, No 167 Baltimore street, Baltimore, who has complete sets of harness for exhibition.

The Darien Expedition.

The great Expedition which was sent out to survey the Isthmus of Darien, for the purpose of constructing a ship canal, has turned out to be a disastrous failure, so far as the possibility of executing such a work is concerned. Surveying parties were sent out by the American, French and British governments, all working in unison, but moving on different lines. Lieut. Strain, of the American party, who at one time was supposed to be lost, has turned up alive, as many of those who knew him well predicted; but alas, many of his brave companions will return to their native land no more. It is said that Lieut. Strain went out with Col. Black's map, that had been submitted to the Navy Department, and proceeded with that map as a guide, to the interior. There he found that the map, like many other maps of Railroads and Canals, was a topographical delusion.

Where a river was laid down on the map he found a mountain, and instead of plains he discovered *sierras*.

And thus, this splendid scheme, about which three great nations indulged such hopes, for uniting the Atlantic and Pacific by a short cut, is dashed at once to pieces. Nothing now remains for us, then, to shorten the distance—commercially—to our Pacific possessions but a railroad, and the sooner one is constructed, so much the better for our country.

Punching and Shearing Machines.

On page 217, this volume, "Scientific American," we illustrated the punching and shearing machine, manufactured by Messrs. Liddell, (not Little as it was given by mistake) Kepler & Co., of Erie, Pa., which was on exhibition at the Crystal Palace. Since that time we have received information from the manufacturers that they have sold the machine that was on exhibition at the Crystal Palace, and have received a great number of orders for new machines from parties who became acquainted with the machine from the engraving in our columns. A good machine like this one will always find purchasers when its merits are made public.

Colt's Pistols in Europe.

Colonel Colt, it is said, has received an order from the British government to furnish their Baltic fleet with 5,000 of his navy pistols, as soon as possible; and he is notified that the entire fleet is to be furnished with them. The Armory at Hartford, Conn., will be required to do a good portion of this work.

Postage.

Mr. Olds, of Ohio, has introduced into the House of Representatives (Cong.,) a proposition to increase the rates of land postage up to five and ten cents for single letters. We hope such a proposition will not be entertained.

Cleaning Dirt.

It cost $60,000 a month ago to make one good sweep up of the streets of this city, and they are now ready for another.

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Scientific American.

NEW YORK, APRIL 22, 1854.

Depreciation of Textile Fabrics.

With all our new improvements in the arts, especially in the shortening of certain manufacturing processes to a few hours, which once occupied weeks, serious objections can be urged against many of our boasted claims to real useful improvement. One of these may be advanced against modern bleached cotton cloth. It is well known that by the employment of chlorine, cotton and linen cloth, which at one period required months to bleach in sunshine and rain, can be rendered more snowy in appearance in as many hours. But modern bleached cloth does not possess the enduring qualities of that which is bleached by exposure to the sun, wind, and rain—the old-fashioned method of bleaching. This is at least true of the cloth which is sold for common use, and we refer to none other. Having made the inquiry respecting the durability of bleached and unbleached cotton cloth, we were surprised to receive the answer that the former lasted nearly three times as long as the latter—both being submitted to the same tear and wear. This makes good the old proverb, "soon ripe, soon rotten." Now we apprehend that, as a general thing, the blame should not be laid upon the modern improved process, but those who conduct it. Strong alkaline lyes are very injurious in destroying the tenacity of cotton and linen fiber, rendering them pulpy, and this indeed appears to be the fault with modern bleached cotton goods; they have a paper appearance and touch, (and a paper endurance also) as if the heart and substance were either boiled or expressed out of them. We are confident that a great improvement can be effected in preserving the tenacity of cotton cloth during the bleaching process, and it becomes those who conduct such processes in our country (and our bleachworks are not very numerous) to see to this matter, and redeem their character.

We have indeed not a little to boast of in the way of modern improvements in the manufacture of cloth, such as woolen cloths for garments, but at the same time manufacturers have also wonderfully improved upon the old modes of cheating the public. The old manufacturers were the "rough-and-readys," they had more honesty, if they had less polish than their descendants. What they sold required only the naked eye to examine, not the microscope, as is now the case. Thus a beautiful looking piece of black cloth, with a nap apparently like silk, and which in olden times would have been a warrantee to its lasting for a life time, will, when subjected to its legitimate purpose of being worn in a pair of inexpressibles, look rusty in a few weeks; the fine nap will be found to rub off and crumble down as if it were plumbago, and the bare threads soon shine bright as a polished stove pipe. Why is this? The manufacturers *pad* flocks into the pores of their cloth, in order to thicken and give it a fine close nap—gross deceptions.

These things should not be. We want to see solid genuine improvements, or none at all. It is better to have a rough jewel than a polished imitation. There are other manufactures than those to which we have alluded, which are as justly deserving of special notice, and to some of these we may refer at another period.

Another Fire Annihilator Experiment.

At the solicitation, it is said, of several insurance companies, an experiment was made in Brooklyn, on Thursday afternoon, the 13th inst., with Phillip's Fire Annihilators. A small building about 14 feet square, and a little over one story high, constructed of planed and matched pine boards set up perpendicularly, and presenting a very close faced wall, was the subject of experiment. Inside there was a close half floor between the roof and lower floor, and some boards at one side were set on edge, with a quantity of tarred shavings among them. The house was very tight and favorably made for the trial. Dr. Colton conducted the experiment. The shavings when set on fire made a tremendous blaze and generated huge volumes of smoke. Three large annihilators were then applied, and the fire was extinguished in a very few minutes. Some of the spectators were highly pleased with the experiment, while others were not. We consider it no better, if as good, as the one we witnessed at Melrose two years ago, conducted by Mr. Phillips in person. The owners of the annihilator exhibit a great deal of perseverence, and have, we understand, reduced their extravagant claims of its merits to about the true standard—the one we have given it, namely, useful for ships at sea and confined rooms, when applied in season.

Improved Cotton Press.

The annexed engravings represent the cotton press of Lewis Lewis, of Vicksburg, Miss., for which a patent was issued about two years ago. Figure 1 is a side elevation. Fig. 2 is a detached portion of the press in which the shaft L, the pinion T, and one of the racks, are enlarged, and fig. 3 a horizontal section through the line $x\,x$, fig. 1. The same letters refer to like parts on all the figures.

Figure 1.

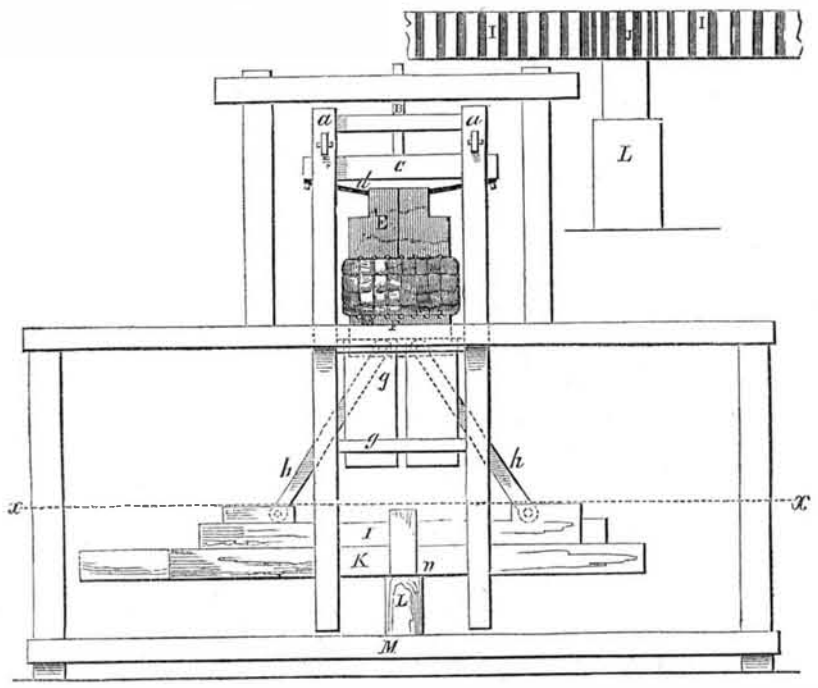

Figure 2.

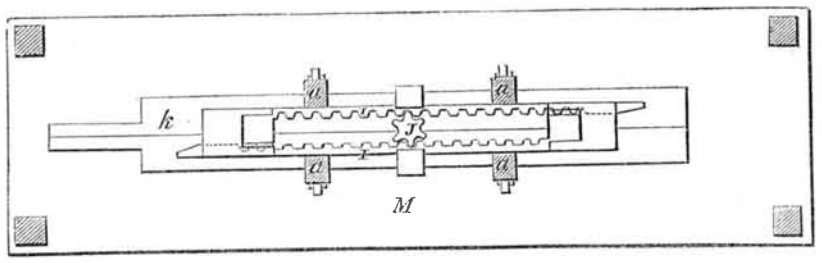

Figure 3.

a a are the gallows posts, B is the journal, C is the straining beam or bar; *d* is an iron bar on which the cap heads slip out, E is the cap head, F is the follower block, *g g* are the pieces to which the box is fastened to the levers *h h*. I I are the racks, and J is the spur pinion for operating them, *r* is the bed piece, L is the center shaft, secured in block M, and *n* is the gudgeon of the shaft on which the press revolves. These parts of the press and their relationship will all be easily understood.

The operation of this press is as follows:—The power may be applied to either end of the bed piece, K, which may be moved around in any direction. The racks, I I, are set to move in parallel lines along the bed piece, between the guides. When the pinion, J, is in operation, it moves the racks in contrary directions, and forces up the hinged levers, *h h*, which are secured to them—as shown in figure 1—and thus carry up the follower, F, through the box in which the cotton (or hay or other article) to be pressed, is placed, and compresses it into a bale against the cap head, C, as shown.

This press differs from other lever presses by revolving around the central shaft. As described, it will be observed that the central shaft is stationary and the pinion operated through the lever piece, K, but the press can be made to operate by applying the power to the central shaft and revolving it, and the position of the follower and its operating agents may be reversed—placed at the top, instead of at the bottom of the press. The claim is for "the arrangement described of a vertical revolving press with toggle joint levers, *h h*, operated by the racks I I and the fixed pinion, J." It is stated by the patentee, that this press is capable of pressing more cotton, hay, &c. with more ease, in a given time, than any other lever press with which he is acquainted, It is certainly a very simple press; it involves no complicated arrangements, or devices, and it appears to us that all its parts can be made strong and durable; it can be easily attended and worked, and cannot be readily disarranged or broken.

We have seen a great number of certificates from planters who have used this press, all of whom speak of it in terms of the highest praise. The inventor of it has been engaged for 21 years in building cotton gins and presses.—More information about it may be obtained by letter addressed to Vanloon, Paxton, & Co., Vicksburg, who receive and fill orders.

Important Patent Decision.

We learn that the United States Court, through Judge Nelson, has rendered a decision establishing the validity of Blake's patent for fire and weather proof paint. The validity of the paint being thus established in a Court at law, the patentee will not again be compelled to try it before a Jury, but can bring his suit in a Court of Equity, which (after the patent has been established as above) will grant an immediate injunction against any party who is making, selling or using, the fire-proof paint in violation of his patent, and appoint a Master in Chancery, before whom the damages already sustained by the patentee will be assessed. It is therefore important to those who have been infringing his patent, to know the position they now occupy.—[New York Tribune, of the 12th inst.

[The above no doubt was intended to mean the validity of the *patent*, not the *paint*, but the great mistake committed is that a jury has nothing to do with such a decision; they only decide upon questions of fact, the novelty of the invention, its usefulness, and infringment by the defendant. The U. S. Supreme Court is the supreme arbiter of the validity of a patent, for it decides all disputed questions of law. The "Tribune" not being acquainted with such things, may lead many astray by the above paragraph. What it says about the patentee not being again compelled to try it before a jury, &c., is erroneous.

Even when a patent has been established by law, and even if the patentee gets an injunction afterwards in equity, it is only at the pleasure of the Court, and not by any positive law: such injunctions in the cases of new defendants are merely provisional preludes to trial by jury. It is contrary to the provisions of our Constitution to grant a permanent injunction against any man without due process of law—a jury trial. Of course it would be a good thing if some of the vexatious measures to which patentees are often subjected in defence of their patents were removed; but this cannot be done, according to our Federal Compact and the just independence of the several States, in protecting the rights of their own citizens.

The Crystal Palace in a New Phase.

Our Crystal Palace closed its doors against visitors on Saturday last, April 15, not to be opened again to the public until the 4th of next month, when it will be again inaugurated under a new organization entirely.

It is intended by the present Directors, with the world-wide-known Barnum at their head as President, to open the Exhibition with eclat, giving the artisan and mechanic a voice in the inauguration and enterprise, which was so improperly withheld from them at the opening last summer. It is understood that the politicians and military chieftians are to take their *proper* position on the stage, while the mechanics and artisans to whom the Association are indebted for their beautiful structure, and the ingenious machines and works of art which makes the place attractive, are to have allotted to them a high and prominent position on the occasion.

It is designed henceforth to make the exhibition a "People's Exhibition" in every sense of the term, and reduce the price of admission on certain days of the week, 50 per cent. from the rates heretofore charged. With Barnum as its chief manager, and the people for its patrons, there is every prospect of the Crystal Palace becoming a permanent institution in our land, affording useful and entertaining knowledge for the elevation of the mind, the promotion of the arts, sciences, inventions, manufactures, and works of industry, and a credit and honor to our people and country.

Bank Bills.

Within the past week we have received quite a pile of *bills* which have been devised for the purpose of preventing their alteration. We would greatly prefer a like quantity of current bills, to those which we have received. It is somewhat tantalizing to see a pile of ones, tens, fifties, hundreds, &c., and yet none of them of the least value as a medium of exchange.

We cannot, however, omit to mention a very simple plan, proposed to us by David Baldwin, of Godwinsville, N. J., to prevent the alteration of bills. It is as follows:—Make the one dollar bills, 3 inches broad by 5¾ inches long, increasing every higher bill one fourth of an inch, thereby rendering it impossible to alter a smaller to that of a greater value without being detected at a single glance by the most common observer.

War, War.

War has been formally declared by France and Great Britain against Russia, and the great powers in Europe appear to be about to engage in a most desperate struggle. Peace has now lasted between these great powers for thirty-nine years, and it was supposed that they would not be so foolish as to march forth again with their armed hosts to butcher one another. When will the time arrive when the chief object of kings, potentates, and states will be the rendering of good to men, and their worldly ambition, be supremacy in science, art, and industry?

Tallow, Tallow.

There is now apparently a fine field about to be opened for the sale of any extra tallow that our tallow dealers may have on hand, or our farmers be able to raise during the war between Britain and Russia. In 1852 no less than 64,578½ tuns were imported from the latter country, by the former. All this supply will now be cut off, and the soap and candle makers of England will have to look about them for supplies from some other quarters.

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In Peace and War—Railway Signals.

We have received a pamphlet from the goodly city of Cork, in old Ireland, which (the pamphlet) bears the above caption, surmounted with an engraving of one of the signals. The inventor is J. Norton, with whom we are not acquainted, but he, it seems, knows the "Scientific American." His pamphlet describes his signals for railroads thus: "I would propose as the means for the guard of a train to call the attention of the driver of the engine—either to draw up, go slow, fast, or backward—to shoot from a steel cross-bow—or the ordinary long bow—an arrow without feathers, and having fixed on its blunt head, a paper case charged with an ounce of powder; this charged case is made to explode on falling to the ground by friction or percussion." This plan, he says, he tried on the 7th of last month, on the Cork and Bandon Railroad, having shot the signal from a bow, when the arrow fell on the right side of the road, thirty yards in front of the engine, and made a loud report.

In reading this pamphlet we could not help exclaiming in surprise, "is it possible that the civil engineers in the *old country* are yet ignorant of the simple American plan of the conductors communicating with the engineers, and which has been in general use since our first railroads were built? But it seems they are, and that there is no such plan of communication employed on the British and Irish railroads, or else such a railroad signal as that proposed by Mr. Norton would surely never have been brought before the public. We must tell our Irish engineers for their enlightenment that the simple plan in general use here, is to have a gong or bell secured on the locomotive, close to the ear of the engineer, the hammer to operate which is secured to a cord which passes along the tops of the cars, (being jointed between each pair of cars) so that the conductor can communicate with the engineer from the platform of every car, and by different strokes on the gong or bell, inform the engineer to stop or go forward, &c. This plan is immeasurably superior to the clumsy plan of shooting an explosive signal from a cross-bow. Let the English railroad companies throw aside their prejudices and fogyism and adopt our simple plan; the cost is but a trifle—not so much as that of a good cross-bow.

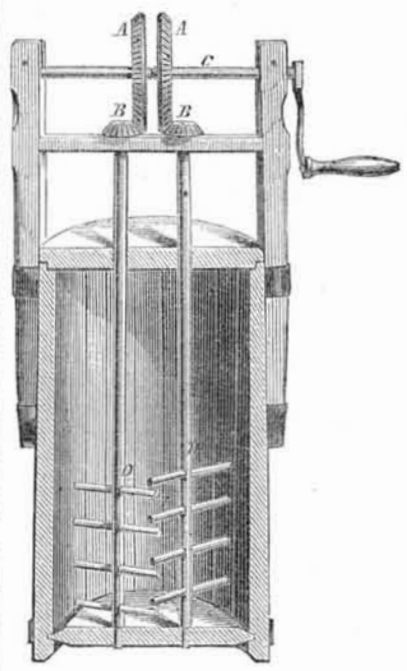
In England, instead of adopting the simple American signal, we perceive by some of our London cotemporaries that an electric telegraph signal, put in operation by a Prof. Gluckman, has recently been tried on one of the express trains of the London and Northwestern Railway. It is thus described:—

"The conducting wires are inclosed in gutta percha, and attached to each carriage in a wooden case under the frame of the carriage. The bands enclosing the wires at each end of the carriage are elastic, and can be hooked and unhooked, as occasion requires, with great facility, thus continuing the communication from carriage to carriage in the train. The battery is fixed in the guard's van and a bell is on the engine. The guard can give the signal to the engine-driver by placing his finger on a button, which causes the bell on the engine to strike or ring continuously or at intervals."

Now why is it that such an expensive and complicated apparatus is even thought of, when a rope or chain and bell can accomplish the same object.

Mr. Norton, as we are informed by his pamphlet, has also invented an explosive hand percussion shell, and a percussion shell for rifle cannon. He may have invented improved shells of this description, for which he should receive just praise, but percussion explosive shells for artillery are not new; they have been long known in this country, and we know that an American inventor carried some of them to Europe nine years ago. Of this fact, however, we believe that Mr. Norton is ignorant, and to him the invention is new—he is an original discoverer, but not the first. We have seen it stated in a number of our foreign exchanges that the British fleet is well provided with these destructible missiles, and that one of them from a large gun will, when it strikes another ship, explode with such terrific force as to open a rent in her sides ten feet wide. These may be mere reports, but we personally know something about the destructive effects of percussion shells, having witnessed some experiments with them in 1845, we think. Our present Secretary of State, (Mr. Marcy) witnessed the same experiments.

Double Dasher Churn.



The annexed figure represents the double dasher churn of S. Hewett, of Seneca Falls, N. Y. A A are two bevel wheels on the shaft C, and B B are two bevel pinions on the dasher shafts, D D. It is not necessary for us to give any further description of this churn, as its action and construction will at once be comprehended by every person. The dashers so placed in conjunction with one another, it is claimed, agitate the milk so as to produce two conflicting currents, and by this means bring the butter sooner than a churn with only one set of dashers, however rapidly they may be operated.—Measures has been taken to secure a patent. More information may be obtained by letter addressed to Mr. Hewett.

Proposed Railroad Bridge Over the Hudson.

A model for a bridge to be erected over the Hudson at Albany, so as not to obstruct navigation, has been exhibited at Albany, by H. Waterman, and examined by a committee appointed by the Senate.

It is proposed to locate the bridge at a point where the free channel is 750 feet wide, and to support it by two piers, which shall divide the space into two equal parts—the central one to be the draw.

The piers are to be each formed by two rows of cast-iron cylinders, or piles, eight in each row, ranging up and down the river, firmly embeded in masonry at the bottom, and so framed together as to form an impregnable ice-breaker—being a modification of what is known as screw piling.

The draw is to be 200 feet wide, and the permanent bridges connecting with each bank of the river, to have a clear span of 235 feet.—These are to be of the railroad grade, and twenty-feet above the ordinary water mark, admitting the passage of the minor class of vessels, canal boats, &c.

The carriage way is to be on top of the railroad bridge, and by an easy grade is to attain an elevation of fifty feet at the middle of the bridge.

The draw or platform (which can be raised and depressed to or from the carriage way or railroad grade elevation at pleasure; and when necessary far above the carriage way) is to be suspended and supported by flexible wire ropes depending from a light span of bridge resting on two towers, 116 feet high, built upon the piers—the ropes passing over drums to the center of the towers, where there are balance weights attached, which descend as the platform rises, and vice versa. Besides these perpendicular wire ropes or supporters, there are others extending from each cross support of the platform to the top of each tower—which are at their extreme tension when the platform is down to the railroad grade, and requires the greatest support—but which are relaxed when it attains the higher elevation and assumes an easy position on the platform.

The platform is raised by adding the weight of water to the balance weight—the water being raised into tanks at the top of the tower by a steam engine of 10 horse power—which will raise the draw every minute during the day.—These motions are entirely at the command of the attendant, and can be performed with great rapidity.

It is proposed to hold the platform generally at the carriage way, fifty feet from the water—which is high enough to permit the free passage of seven-tenths of the navigation—and to lower it to the railroad grade only when a train passes—which will interrupt the carriage transit and navigation, only two minutes. The carriage transit may be interrupted perhaps four or five minutes when a larger steamer or sail vessel is to go through.

Thus it is estimated, the transit of 30 trains daily will interrupt navigation only about one hour out of 24—and that the navigation will be free all the rest of the time, with little interruption to the carriage transit.

A bridge at Albany over the Hudson has been a subject of great solicitude with the inhabitants of that City, for quite a number of years. It is a point where the railroads of the east can very favorably connect with those running through the Mohawk Valley and the interior of this State. A good railroad bridge over the Hudson is a desideratum, so that cars may be run through from Boston, and New York, to Buffalo. There is no such a bridge over the Hudson at present. The construction of one, in this age of engineering skill, we should think, would not be a difficult task. A draw bridge, which would provide for the passage of vessels, would be sustained by the U. S. Supreme Court, as a perfect legal structure.

Amorphous Phosphorus.

BY A. PUTTFARCKEN.

The author has examined some amorphous phosphorus obtained from England. He received it in the form of a brownish-red, shining, coherent powder, the peculiar odor of which powerfully affected the eyes.

By long washing with pure water, the phosphorus lost 13 per cent. in weight. The wash-water contained phosphorus and phosphoric acids, and a small quantity of phosphate of lime. The powder, when exhausted by water, was put, when dry and neutral, into well-stopperd vessels; it had however again become acid in a very short time.

15 grms. of the so-called amorphous phosphorus were oxydized with nitric acid; this was readily effected without the assistance of heat, merely by the gradual addition of the phosphorous to the nitric acid. 135 grms. of fluid phosphoric acid, of spec. grav. 1·13, were obtained. Sulphuretted hydrogen, however, threw down so much sulphuret of arsenic from this phosphoric acid, that the quantity of that metal in the phosphorus must have been equal to ½ per cent.

For the sake of comparison, 15 grms. of common phosphorus were converted into phosphoric acid of the same specific gravity.—The quantity of acid was 160 grms.

Exposure to a temperature of 392°–437° F. for three days, left the amorphous phosphorus unchanged, so that even the microscope could detect no globules of ordinary phosphorus.—When heated in a glass tube drawn out to a capillary point, it became black, with the evolution of a strong odor of phosphuretted hydrogen, which probably arose from the decomposition of the moist phosphorus acid. It did not fuse during the operation, and on cooling re-acquired its original color. After the tip of the glass tube had been sealed up, the tube was inserted into another a little wider, and then strongly heated for a considerable time with the blow-pipe. No sublimate was produced, nor had the substance undergone any change by its exposure to a red heat. Boiled with a solution of caustic potash, the substance evolved no phosphuretted hydrogen. Oil of turpentine dissolved much less of it than of ordinary phosphorus.—[Archivder Pharm.

[From this the author concludes that the so-called amorphous phosphorus does not deserve this name. It is rather a low oxyd of phosphorus. This is the phosphorus now used in making matches in England, and which is said, does not injure the health of the operatives, like free phosphorus. The amorphous quality is imparted to it by submitting it to a high degree of heat in a closed vessel under pressure.

The Osage Orange for Hedges.

The osage orange is highly estimated for making hedge fences. The extensive gardens of Nicholas Longworth, in the suburbs of Cincinnati are fenced with this plant. It has proved to be an effectual barrier to intruders, who have endeavored to plunder his choice fruits—grapes, peaches, &c., owing to its armor of large pointed thorns. The seeds are sown in May, in beds like those of beets, and are set out next spring in hedge rows, six inches apart, and the tops cut off to the ground. It is a native of Texas and Arkansas, and will grow well in our northern climate, except on very wet and cold soils. Large quantities of the seed have been planted during the past two years in Ohio and other western States, and immense tracks of land in those States will soon be protected and adorned with this valuable plant. J. W. Thorburn & Co., John street, this city, and others have the seeds for sale, and those persons who are inclined to protect their gardens and fields, and beautify the same, can now effectually do so with the thorny barricade of this hedge. Its full height is 16 feet; in four years it attains to a hight sufficient to fence out persons and cattle. The Cherokee Rose is also extensively cultivated and used for hedge fence at New Orleans, and the southern climate is favorable to its growth, but the osage orange cannot fail to thrive in our climate, particularly about New York City, Long Island, and New Jersey. Why do not those of our citizens who have seen and admired the hedge fences in England, introduce this kind of fence in this vicinity? The Illinois Central Railroad Company have contracted with James Sumpter & Co., of Montgomery Co., Ohio, to hedge with the osage orange, both sides for one hundred miles of this railroad, commencing fifty miles north of Chicago; this will require about two millions of plants. The ground along the line is to be cleared, levelled, broken up, and prepared this ensuing summer, and the plants are to be set out next spring. As an evidence of the extreme hardiness of this plant, we would state that they have been grown successfully for the last six years in the Union Nurseries of the city of Schenectady, N. Y., from seed gathered in Columbia, S. C. It has stood the severe winters well, and seems to be the very material for live fences in any climate where the Isabella grape can be cultivated successfully.

Illinois Central Railroad.

We have received a copy of the Reports of the Directors and the Chief Engineer (R. R. Mason) of the above named Railroad. The total expenditures have been nearly twelve million dollars. The total quantity of rails required for the Road and its branches will amount 72,000 tuns.

There have been delivered to the Company cars, up to the present time, as follows:

Thirty Passenger Cars, ten Baggage Cars, about six hundred eight-wheeled Freight Cars, and fifty Gravel Cars. Further contracts will be made so as to insure, by the time of the completion of the Road, a sufficient supply to accommodate its business.

They have made contracts for one hundred and six locomotives, of which there have been already delivered forty-two. The remainder will be delivered from month to month, so that the whole number will be received as rapidly as the exigencies of the business will require them.

The entire length of the road is 704 miles, of which 270 are now laid with rail, and 601 graded and finished. The route of this road is very favorable, 90 per cent of it being nearly a straight line. Our Western States are exceedingly favorable to the construction of railroads, and this one, when completed, will be one of the most profitable and important in our country.

The yearly boot and shoe mannfacture of Massachusetts amounts to $37,000,000.

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TO CORRESPONDENTS.

J. H. F., of Ark.—Pen-holders made hollow to contain ink are not new, on the contrary they are old and well-known.

W. G., of St. Johns—We have sent you a pamphlet describing the Rotary Engine. If you wish our opinion in regard to yours, you should send us a proper sketch and a description of its operation.

H. R., of Ind.—We have received but one letter from you, which bears date March 31. Have carefully examined the sketch and description of the double cylinder pump, and cannot discover the slightest chance for a patent on it. The principle is not essentially different from other double action pemps.

W. A. P., of Miss.—Some six months since an application for a patent was made to the Office for a "Cow Catcher," involving the same principle as the one which you describe, therefore we cannot advise you to make an application.

J. A. A., of Mass.—Your idea of constructing wagon bodies on an extension principle is a very good one for many purposes, and the contrivance as described is new so far as we know, and we think a patent can be secured.

S. E. H., of Ohio—Your improvement in car brakes possesses some novelty not embraced in any other with which we are acquainted, and we incline to the opinion that a patent can be secured. You had better send us a model.

S. B. Prentiss, of Jackson, Geo., sends us a fine specimen of pure plumbago, and wishes to learn where he can find a market for it, also price per cwt. Some of our readers may be able to furnish the necessary information.

A. F. T., of Mass.—Such car axles as you speak of will work around curves better than the common kind, they are in use to some extent on crooked lines.

E. M., of Ill.—We know of machines which are intended for the purpose you name. If you will send us a sketch and description of yours we can better decide the question of novelty.

J. B. M., of New York.—We will be happy to take a look at your invention after you have obtained the patent.

P. H. M., of New York.—You would perceive by the letter on flying, last week, which was received before yours, that the same views were presented.

J. P. C., of N. Y.—The chlorine has very little effect upon the iron when used with steam.

C. S. H., of New York—We cannot tell you how long cords usually wear. The patent could only be obtained for the process, not the article, unless it was a different manufacture.

Money received on account of Patent Office business for the week ending Saturday, April 15:—

A. V., of O., $55; J. F. L., of N. Y., $30: N. F. M., of R. I. $30; J. T., of Mich., $30; W. S., of N. J., $10; A, C. M., of Ind., $25; G. M., Jr., of Ill., $35; T. H. P., of Me., $25; L. L. P., & Co., of Conn., $20, J. F. B., of Ga., $15; J. C. T., of Mass., $30; R. P. B., of N. Y., $25; P. S., of N. Y., $25; E. M., of N. Y., $25; T. H. D., of N. H., $20; E. H., of Ill., $25; C. A. N., of Mass., $12; E. W. G., of Mass., $20; J. W. M., of Ill., $30; T. F. C., of Vt., $25; W. S., of N. H., $12; H. W. P. & Co., of N. Y., $5; H. C. S., of O., $10: J. W. B., & Co., of Ark., $40; I. M. H., of N. J., $25.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, April 15:—

H. T., of N. Y.: T. H. P., of Me.; J. M. H., of N. J.; A. C. M., of Ind.; G. M., Jr., of Ill.: L. L. P. & Co., of Ct.; J. F. B., of Ga.; J. G. H., of Fla.; G. E. H., of N. Y.; R. P. B., of N. Y.; R. V. DeG., of L. I.: W. R., G., of Ky.; P. S., of N. Y.; H. W. P. & Co., of N. Y.; C. A. N., of Mass.; T. F. C., of Vt.; E. H., of Ill.

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American and Foreign Patent Agency.

IMPORTANT TO INVENTORS.—The undersigned having for several years been extensively engaged in procuring Letters Patent for new mechanical and chemical inventions, offer their services to inventors upon the most reasonable terms. All business entrusted to their charge is strictly confidential. Private consultations are held with inventors at their office from 9 A. M., until 4 P. M. Inventors, however, need not incur the expense of attending in person, as the preliminaries can all be arranged by letter. Models can be sent with safety by express, or any other convenient medium. They should not be over 1 foot square in size, if possible.

Having Agents located in the chief cities of Europe, our facilities for obtaining Foreign Patents are unequalled. This branch of our business receives the especial attention of one of the members of the firm, who is prepared to advise with inventors and manufacturers at all times, relating to Foreign Patents.

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Sole manufacturer and proprietor of the patent, New Haven, Conn. 30 7*

$1000—Will be advanced, on good security, to any respectable person, to start or aid some generally useful and valuable patented invention, American or Foreign, that will yield a net profit of at least 500 per cent on this sum within three months, in daily or weekly cash returns, without any personal care, labor or liability on the part of the subscriber. All interest in patent and profits of business to be equally divided. Address "L." 224 West 19th st., New York City, with real name, place of interview, and particulars. 1*

COMPOUND PROPELLING LEVER—Mr. JAS. PERKINS, of New Britain, Conn., has invented a machine which he claims, with small force applied, will produce great effective power for propelling machinery. Measures have been taken to secure a patent. 1*

PASSAIC WORKS—Passaic street, Newark, N.J.—Manufacture and have on hand, Steam Engines of the most approved construction and various sizes. Also Machinists Tools of all kinds: Lathes, Planing Machines, Drills, &c., machine for Enameling Carriage Cloth, and Machinery of every description. Jobbing Work promptly attended to. Address GEO. WATTS, Passaic Works, Newark, N. J. 32 4eow*

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J. M. GORDON, Secretary.
Boston, Mass., March 31, 1854. 31 15*

KETCHUM'S IMPROVED MOWING MACHINE with entire change of Gear. The only successful grass cutter now known; warranted capable of cutting and spreading from ten to fifteen acres of any kind of grass, per day, in as good a manner as is done with a scythe. Orders filled at our establishment in Buffalo, N.Y., or at J. MAYHER & CO.'S, and R.L. ALLEN'S, Water street, N. Y. HOWARD & CO.,
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SEWING MACHINE—The Office and Warerooms of the Wheeler & Wilson Manufacturing Company, for the sale of their Sewing Machines, is removed to No. 343 Broadway, where the public are invited to call and examine them in practical operation. 31 13*

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ROBERTSON'S—Recently patented Keyed Stop Finger Board, for the Violin, can be examined and attached to old or new violins at the manufactory, 181 Broadway, N. Y. 31 4*

MACHINERY.—S. C. HILLS, No. 12 Platt-st., N. Y. dealer in Steam Engines, Boilers, Iron Planers Lathes, Universal Chucks, Drills; Kase's, Von Schmidt's and other Pumps; Johnson's Shingle Machines; Woodworth's, Daniel's, and Law's Planing Machines; Dick's Presses, Punches, and Shears; Morticing and Tennoning Machines; Belting; Machinery Oil, Beal's Patent Cob and Corn Mills; Burr Mill and Grindstones; Lead and Iron Pipe, &c. Letters, to be noticed, must be post-paid. 27tf eow

MECHANIC'S FAIR—In Portland, Me., September, 1854. The Maine Charitable Mechanics Association will hold a Fair and Exhibition for Premiums, in Portland, Maine, commencing on the 19th day of September next, and invite contributions from every industrial profession. Choice specimens of ingenuity and skill—unique and valuable domestic productions, natural and artificial—the delicate and beautiful handiwork of females—labor saving machines, implements of husbandry, new models of machinery and, indeed, articles from every department of manufacture, which it would be impracticable to particularize in this advertisement, Medals and Diplomas will be awarded to owners or manufacturers of articles deemed worthy of that distinction. Steam Power will be provided, to show any model or machinery in operation to the best advantage. Further information is communicated in the Circular issued by the Association, which may be obtained at this office, or by addressing J. R. MILLIKEN.
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MINING MACHINERY—Of most approved construction, furnished by FRED'K COOK & CO, Hudson Machine Works, Hudson, N. Y. 15 6m

STAVE MACHINERY.—The "Mowry Stave Cutter and Jointer Combined," which received the highest award at the Crystal Palace, is the only machine that ever undertook to joint a stave properly at the same time that it was cut and dressed, without rehandling. One man tends the machine and turns out from a solid block of wood ninety staves a minute, ready for the truss hoop. It is not only the best in use, but for slack work we challenge the world. For machines and rights in New York, apply to CHARLES MOWRY, Auburn. For machines and rights in other parts of the United States, apply to GWYNNES & SHEFFIELD, Urbana, Ohio. 29 tf

1854. WOODWORTH'S PATENT PLANING, TONGUING, GROOVING, RABETING, AND MOULDING MACHINE.—Ninety-nine hundredths of all the planed lumber used in our large cities and towns continues to be dressed with Woodworth's Patent Machines. Price from $150 to $800. Two machines are at the Crystal Palace. For rights in all parts of New York and Northern Pennsylvania, apply to JOHN GIBSON, Planing Mills, Albany, N. Y. 18eowtf

IRON FOUNDERS' MATERIALS, viz: Pulverized Sea Coal, Black Lead, Soapstone, Anthracite and Charcoal Facings. Also, best imported Fire Bricks, Fire Clay, Fire Sand, and Moulding Sand, for sale by
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ENGINEERING—The undersigned is prepared to furnish specifications, estimates, plans in general or details of steamships, steamboats, propellers, high and low pressure engines, boilers, and machinery of every description. Broker in steam vessels, machinery, boilers, &c. General Agent for Ashcroft's Steam and Vacuum Gauges, Allen & Noyes' Metallic, Self-adjusting Conical Packing, Faber's Water Gauge, Sewell's Salinometers. Dudgeon's Hydraulic Lifting Press, Roebling's Patent Wire Rope for hoisting and steering purposes, etc.
CHARLES W. COPELAND,
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MATHEMATICAL AND OPTICAL INSTRUMENTS—The subscriber begs leave to bring to the notice of the professional community his new and extensive assortment of the above Instruments, which he partly imported direct from the most celebrated makers in Europe, and partly had manufactured under his own personal supervision. The undersigned would particularly invite attention to his very large and complete assortment of the justly celebrated Swiss Mathematical Drawing Instruments, for the sale of which, in this country, he has the sole agency, and which he can furnish at from $5 to $200 per case. Those Drawing Instruments received the prize medal at the London and New York Exhibitions. Orders from any part of the Union promptly executed, and price list sent if required.
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PORTABLE STEAM ENGINES—GEORGE VAIL & CO., Speedwell Iron Works, Morristown, N. J., LOGAN VAIL & CO., No. 9 Gold st, N. Y., are prepared to furnish Portable Steam Engines from four to eight horse power, with locomotive boilers. These engines are recommended for their simplicity, durability, and economy, being made from the best materials and designed for practical use. They are placed on wheels convenient to be moved from place to place, and are shipped in working order: for plantation use, machinists, or others wanting small power, these engines will be found superior to any others in use. A Silver Medal was awarded at the late Fair of the American Institute, and a premium in cash of $100 at the Maryland State Fair, held at Baltimore in October last. Persons writing us by mail will be particular to give their address in full. 21 38*

JOHN PARSHLEY, No. 5 and 7 Howard st., New Haven, Ct., manufacturer of Machinists' Tools, and Steam Engines, has now finishing off 25 Engine Lathes, 6 feet shears, 4 feet between centers, 15 inches swing, and weighs about 1100 lbs. These Lathes have back and screw gear, jib rest, with screw feed, and the rest is so arranged that the tool can be adjusted to any point the work may require, without unfastening the tool, hence they possess all the good qualities of the jib and the weight lathe; they are of the best workmanship. Price of Lathe with count shaft and pulleys, $155 cash. Cuts, with full description of the lathe, can be had by addressing as above, post-paid. Also four 30 horse power vertical Steam Engines with two cylinders. Price of engine with pump and heater, $800 cash. For particulars address as above. 19tf

SCREW CUTTING MACHINES, with P. W. Gates' Patent Dies—The subscribers keep constantly on hand three sizes of the above-named machines, to wit—No. 1 machine, 10 sets dies and taps from one-half to two inches, $350; No. 2, 8 sets dies and taps, one-half to one and a half inches, $250; No. 3, 6 sets dies and taps, three-eighths to one inch, $150. Cash on delivery at shop. P. W. GATES & CO.
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PLANING, TONGUING, AND GROOVING—BEARDSLEE'S PATENT.—Practical operation of these Machines throughout every portion of the United States, in working all kinds of wood, has proved them to be superior to any and all others. The work they produce cannot be equalled by the hand plane. They work from 100 to 200 feet, lineal measure, per minute. One machine has planed over twenty millions of feet during the last two years, another more than twelve millions of of feet Spruce flooring in ten months.. Working models can be seen at the Crystal Palace, where further information can be obtained, or of the patentee at Albany, N. Y
27tf GEO. W. BEARDSLEE.

SHINGLE MACHINES—Wood's patented improvement in Shingle Machines, is unquestionably the best ever offered to the public. The undersigned is now at the West, offering rights in this machine for sale. It is a rare opportunity for a safe and profitable investment in a machine without a rival, for the purpose to which it is applied. Parties wishing to correspond with me can do so by addressing J. D. JOHNSON,
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NORRIS WORKS, Norristown, Pa. The subscribers build and send to any part of the United States, Pumping, Hoisting, Stamping, and Portable Engines, and Mining Machinery of every description.
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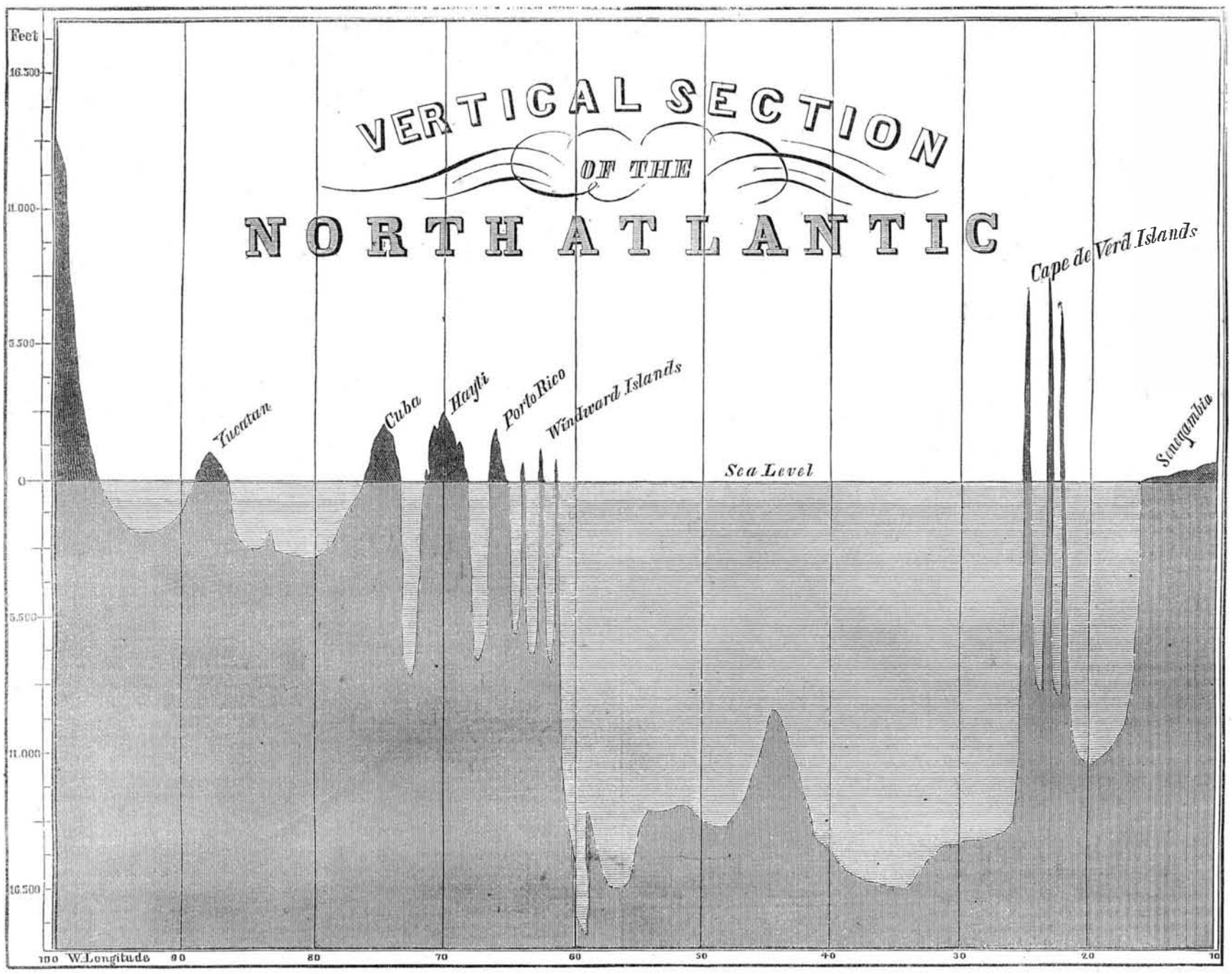
DEEP SEA SOUNDINGS BY AMERICAN VESSELS.



It is doubtless well known to the readers of the "Scientific American," that during the last few years the United States Government has authorized the employment of several vessels, under the direction of Lieutenant Maury, the Director of the National Observatory, in investigating the great physical phenomena—the Atlantic Ocean, its currents, winds, ocean-bottom, shoals, &c. These investigations, not yet terminated, have been productive of an immense amount of information of the greatest practical value to American commercial interests, and have at the same time thrown much light upon many purely abstract questions of science.

The department of deep sea-soundings, undertaken with a view of determining the depth of the ocean, its varying temperatures, its concealed or under-currents, and the nature and configuration of the bottom, has especially furnished results of the greatest interest and novelty. In addition to numerous soundings made at different isolated points, a continuous line of soundings has been run in several instances from a given point on the coast of North or South America, to an opposite point on the shores of the Eastern Continent. In this way the observers have been enabled to construct charts exhibiting sections of the sea bottom for a given parallel, with almost the same accuracy as though the same portion of the earth's surface had been surveyed and mapped with the compass and the level.

For the better illustration of the subject we have placed at the head of this article an engraving of a vertical section of the North Atlantic, reduced from the chart constructed from actual soundings recently published by the National Observatory. The object of the chart is to illustrate the comparative depressions of the ocean bottom below the sea-level, as contrasted with elevations of adjacent continents and islands. The section commences with the volcanic range of mountains in Mexico, Lat. 20½° N., at an elevation of about 15,000 feet above the sea-level, and pursuing a straight line strikes that portion of the Gulf of Mexico inclosed by the peninsula of Yucatan; thence continuing in a straight line it crosses that portion of the Gulf between Yucatan and Cuba, across this Island, Hayti, Porto Rico and the Windward Islands, thence across the wide expanse of the Atlantic to the Cape de Verd, and the elevated peak of Teneriffe, and thence to the coast of Africa, where the section terminates at Senegambia, Lat. 18° North.

This section strikingly confirms the predictions which were made soon after the commencement of the deep sea soundings by Lieut. Maury, viz., that the bottom of the sea was probably much more ragged than the surface of the dry land. Indeed, so ragged and precipitous is the sea bottom along the line delineated, that, to speak jocosely, had a way been opened here whereby the chosen people could have crossed dry-shod, they would not have found it of any great account, but would have made much better time by boat.

The reason why the bottom of the sea should naturally be more ragged than the land are obvious; on the land the rains and the winds are always drifting, washing, and wearing down the high places and filling up the low. These agents, on the contrary, are not felt at all, or if felt, felt but feebly at the bottom of a deep sea. On the dry land, frosts and the force of gravity are great levellers. At the bottom of a deep sea no frosts are felt, and the difference of the force of gravity operating upon a rock at the bottom of the sea, and upon the top of a mountain, is as the difference in weight between air and water.

The deepest sounding represented on the chart was that made directly off the Windward Islands, at a depth of about 18,000 feet. This, although by no means inconsiderable, is not the greatest depth attained to, in some other parts of the ocean. It will be also noticed by the examination of the section, that the various West India Islands, including the largest, are but the summits of submarine mountains. The same is also true of the Cape de Verd group, including the peak of Teneriffe, and other points of smaller elevations. These islands, in comparison with the general extent of surface delineated, are but needle-points, and closely resemble some of those curious isolated mountain peaks which the telescope has shown to exist upon the surface of the moon.

[Concluded next week.]

Enemies of the Teeth.

Experiments have gone to prove that there are a large number of insects infecting the gums and the substance collected on the teeth; these work on and destroy the enamel of the teeth, and hence their decay.

It is probable that these parasites exist in larger numbers on the teeth of different individuals and at different ages. This may account for the rapid decay of some persons teeth while very young. The enamel then is soft and more easy to be worked upon. But they are not as frequent in the teeth of children as adults. Hence more notice is taken of their destructive influence when they exist on the teeth of the young. W. H. Waters.

Avon, N. Y.

The railroad from Louisville to Portland, Ky., two miles in length is completed, and is now in full operation. The cars run regularly every ten minutes between the two cities, and convey passengers for only five cents.

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